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GLOBAL DATA MONITORING REPORT

April, 1998

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of aircraft reports (in AIREP/AMDAR code, including AIREPs, ACARs, AMDARs and ASDARs) received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR (in AIREP/AMDAR code, including AIREPs, ACARs, AMDARs and ASDARs) in the layer 70-500 hPa. Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-11 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

N.B. 500 km SATEMs are no longer assimilated into the UKMO global Unified Model. Both 500 km and 120 km SATEMs were replaced on 16th April 1996 by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS (from NOAA-11 and NOAA-14).

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

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Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
6. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
7. January 1998. Increase in resolution of UKMO global forecast model.
8. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.| bias|	≥ 4 hPa	(pressure),
	≥ 5 m s^{-1}	(wind speed),
	> 30 degrees	(direction).
2.SD	> 6 hPa	(pressure),
	> 80 degrees	(direction).
3.PGE	> 25	

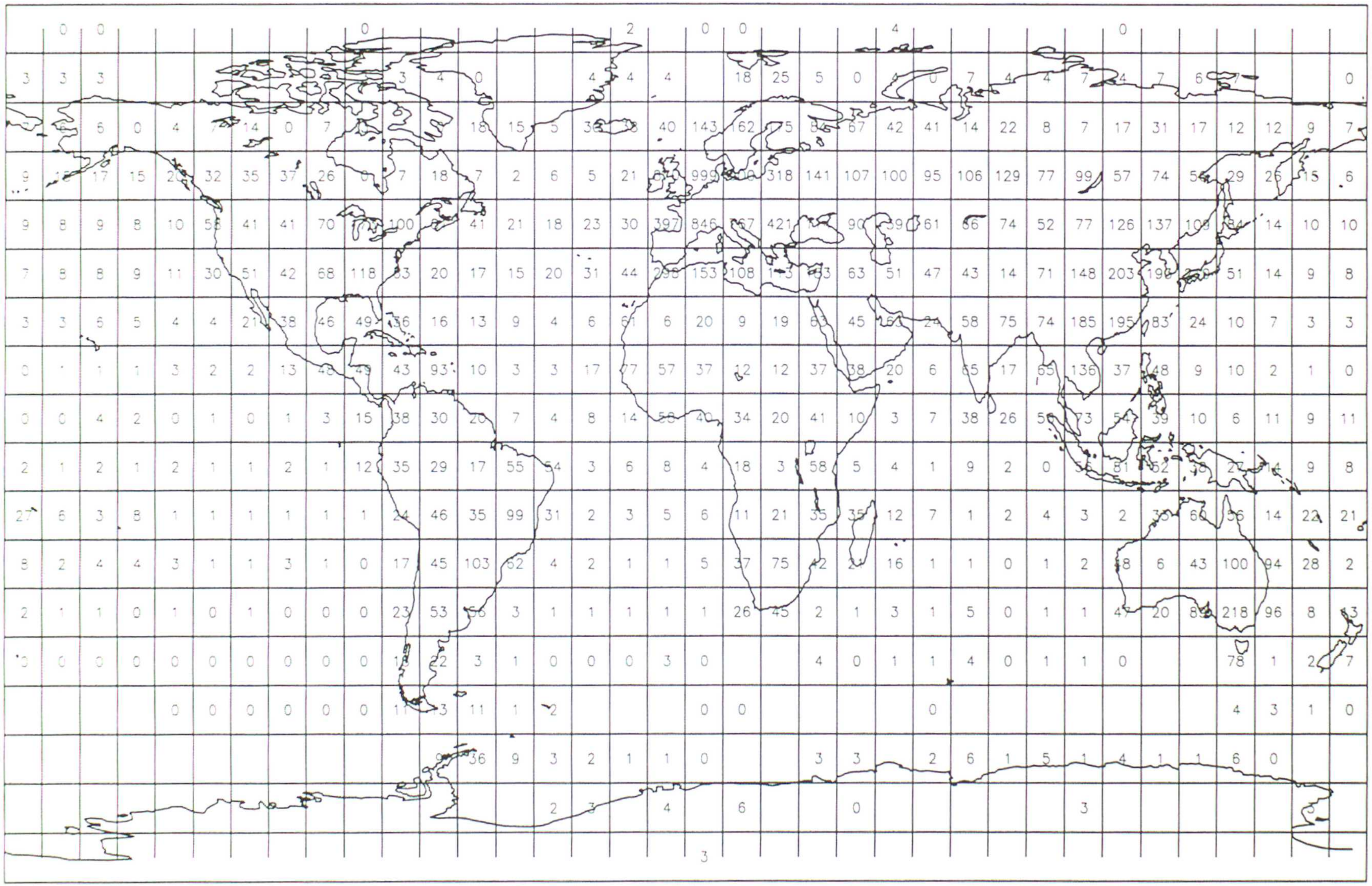
N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
CG2248	ALL	P	SUR	55	54	98	0.0	-12.3	12.3
C6FA6	ALL	P	SUR	36	0	0	0.9	-6.0	6.0
C6HQ04	ALL	P	SUR	37	0	0	1.1	-5.5	5.6
ELHZ5	ALL	P	SUR	35	0	0	1.6	-4.0	4.3
ELTE6	ALL	P	SUR	62	0	0	1.4	-4.7	4.9
ELUB5	ALL	P	SUR	95	8	8	6.1	2.6	6.6
FNBR	ALL	P	SUR	110	41	37	5.8	1.2	5.9
PCCZ	ALL	P	SUR	20	0	0	1.1	5.0	5.1
PEUQ	ALL	P	SUR	35	0	0	1.2	-5.5	5.7
PEXX	ALL	P	SUR	29	0	0	1.5	-5.1	5.3
UCJR	ALL	P	SUR	36	0	0	2.0	4.1	4.6
UIAG	ALL	P	SUR	23	0	0	4.9	-4.9	6.9
UQDB	ALL	P	SUR	33	0	0	1.8	5.6	5.9
VCPT	ALL	P	SUR	24	14	58	5.1	-1.5	5.3
VCTV	ALL	P	SUR	20	10	50	6.3	-2.8	6.9
V2XO	ALL	P	SUR	33	2	6	2.4	-6.8	7.2
V7AW8	ALL	P	SUR	29	1	3	1.1	4.4	4.5
WDZB	ALL	P	SUR	21	0	0	1.3	-5.0	5.2
WRGL	ALL	P	SUR	21	0	0	1.6	4.5	4.7
WIND SPEED									
C6OG3	ALL	SPEED	SUR	26	0	0	3.0	5.3	6.1
DHZAFD	ALL	SPEED	SUR	25	1	4	8.8	8.3	12.1
DUXW	ALL	SPEED	SUR	26	1	4	4.1	5.0	6.4
EQUV	ALL	SPEED	SUR	26	0	0	4.4	6.2	7.6
GOHN	ALL	SPEED	SUR	24	3	13	6.2	9.5	11.4
LADN4	ALL	SPEED	SUR	36	1	3	2.3	5.2	5.7
LAHG2	ALL	SPEED	SUR	52	0	0	4.1	5.7	7.0
LAZK4	ALL	SPEED	SUR	34	0	0	5.0	5.0	7.1
PDGS	ALL	SPEED	SUR	22	0	0	6.2	8.2	10.3
P3WE4	ALL	SPEED	SUR	25	0	0	3.8	7.8	8.7
UDYB	ALL	SPEED	SUR	33	0	0	15.2	5.5	16.1
VJDI	ALL	SPEED	SUR	21	0	0	4.2	5.0	6.6
3EMJ6	ALL	SPEED	SUR	93	0	0	3.6	5.8	6.8
3FLU7	ALL	SPEED	SUR	33	0	0	3.7	5.1	6.3
3FTR6	ALL	SPEED	SUR	23	0	0	3.3	6.2	7.0
WIND DIRECTION									
51015	ALL	DIRN.	SUR	27	0	0	23.6	-35.8	42.9
62107	ALL	DIRN.	SUR	500	21	4	95.4	0.6	95.4
62120	ALL	DIRN.	SUR	34	0	0	90.9	-12.0	91.7
62162	ALL	DIRN.	SUR	95	6	6	111.7	-14.9	112.7
63112	ALL	DIRN.	SUR	108	9	8	85.5	-53.8	101.0
9MCM	ALL	DIRN.	SUR	25	0	0	38.6	-31.5	49.8

AVAILABILITY – SHIP/SYNOP – APRIL 1998

FIGURE 1

MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 18819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9 17 15 29 32 35 37 26 0 7 18 7 2 6 5 21 999 318 141 107 100 95 106 129 77 99 57 74 54 29 26 15 6
9 8 9 8 10 58 41 41 70 100 41 21 18 23 30 397 846 567 421 90 59 61 66 74 52 77 126 137 108 84 14 10 10
7 8 8 9 11 30 51 42 68 118 33 20 17 15 20 31 44 298 153 108 143 63 63 51 47 43 14 71 148 203 196 51 14 9 8
3 3 6 5 4 4 21 38 46 49 36 16 13 9 4 6 61 6 20 9 19 63 45 63 24 58 75 74 185 195 83 24 10 7 3 3
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0 0 4 2 0 1 0 1 3 15 38 30 20 7 4 8 14 58 40 34 20 41 10 3 7 38 26 56 73 54 39 10 6 11 9 11
2 1 2 1 2 1 1 2 1 12 35 29 17 55 54 3 6 8 4 18 3 58 5 4 1 9 2 0 36 81 62 38 27 14 9 8
27 6 3 8 1 1 1 1 1 1 24 46 35 99 31 2 3 5 6 11 21 35 35 12 7 1 2 4 3 2 35 60 56 14 22 21
8 2 4 4 3 1 1 3 1 0 17 45 103 62 4 2 1 1 5 37 75 42 21 16 1 1 0 1 2 18 6 43 100 94 28 2
2 1 1 0 1 0 1 0 0 0 23 53 56 3 1 1 1 1 1 26 45 2 1 3 1 5 0 1 1 47 20 89 218 96 8 13
0 0 0 0 0 0 0 0 0 0 19 22 3 1 0 0 0 3 0 4 0 1 1 4 0 1 1 0 78 1 2 7
0 0 0 0 0 0 11 13 11 1 2 0 0 0 4 3 1 0
9 36 9 3 2 1 1 0 3 3 2 6 1 5 1 4 1 1 6 0
2 3 4 6 0 3
3

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoys.

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 06, 12, 18 UTC

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA : NOBS ≥ 20 , and one or more of the following:

1.| bias|
> 4 hPa (pressure),
> 5 m s^{-1} (wind speed),
> 30 degrees (direction).

2.SD
> 6 hPa (pressure),
> 80 degrees (direction).

3.PGE
> 25.

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
33578	-36.5	-33.0	ALL	P	SUR	205	18	9	6.3	-2.3	6.7
54928	-41.0	-101.3	ALL	P	SUR	213	6	3	2.4	-7.2	7.6
73505	-66.1	141.2	ALL	P	SUR	178	1	1	3.7	-4.3	5.7
73509	43.6	-69.9	ALL	P	SUR	158	158	100	0.0	0.0	0.0
74532	43.5	-67.6	ALL	P	SUR	175	154	88	2.1	-12.2	12.4
WIND SPEED											
44624	60.5	-10.3	ALL	SPEED	SUR	591	4	1	3.5	-6.3	7.2
52534	10.1	125.7	ALL	SPEED	SUR	54	0	0	1.1	-5.1	5.2
52657	26.4	127.8	ALL	SPEED	SUR	40	0	0	2.8	-7.6	8.1
62803	70.4	14.6	ALL	SPEED	SUR	294	0	0	3.4	-5.6	6.6
WIND DIRECTION											
13502	15.2	-35.5	ALL	DIRN.	SUR	36	0	0	23.3	33.8	41.1
52540	13.4	144.7	ALL	DIRN.	SUR	95	0	0	11.6	74.5	75.4
52624	-14.6	138.8	ALL	DIRN.	SUR	107	0	0	26.2	40.0	47.8
52650	-0.2	131.3	ALL	DIRN.	SUR	98	0	0	129.4	1.4	129.4
52657	26.4	127.8	ALL	DIRN.	SUR	118	0	0	122.1	-22.8	124.2
62803	70.4	14.6	ALL	DIRN.	SUR	788	0	0	96.0	22.2	98.5

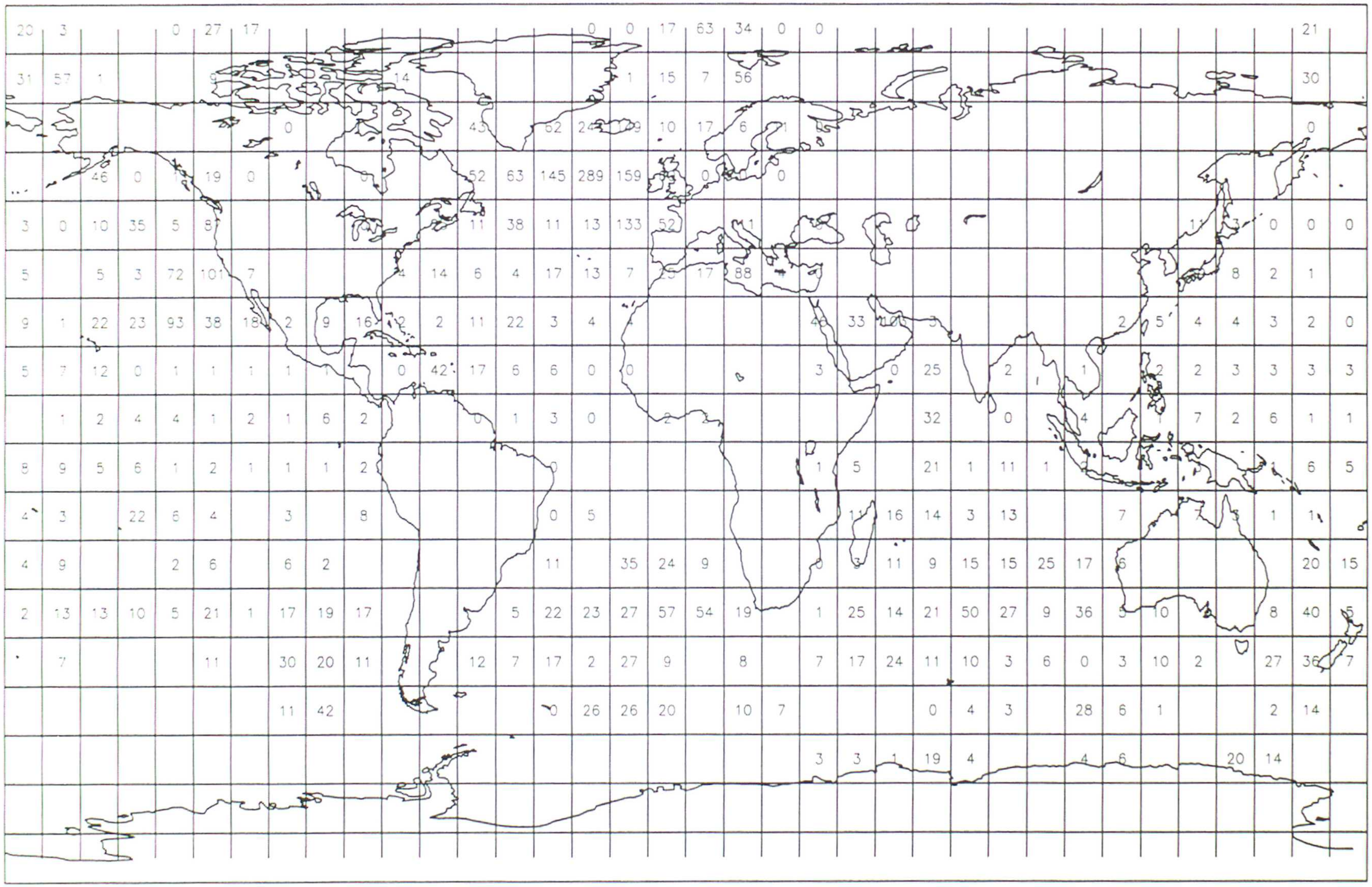
AVAILABILITY – DRIFTER – APRIL 1998

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 5167

FIGURE 2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5 5 3 72 101 7 14 6 4 17 13 7 17 88 8 2 1
9 1 22 23 93 38 2 9 2 11 22 3 4 33 2 5 4 4 3 2 0
5 7 12 0 1 1 1 1 1 0 42 17 6 6 0 0 3 0 25 2 1 2 2 3 3 3 3
1 2 4 4 1 2 1 6 2 1 3 0 2 32 0 4 7 2 6 1 1
8 9 5 6 1 2 1 1 1 2 1 5 21 1 11 1 6 5
4 3 22 6 4 3 8 0 5 16 14 3 13 7 1
4 9 2 6 6 2 11 35 24 9 11 9 15 15 25 17 20 15
2 13 13 10 5 21 1 17 19 17 5 22 23 27 57 54 19 1 25 14 21 50 27 9 36 10 8 40
7 11 30 20 11 12 7 17 2 27 9 8 7 17 24 11 10 3 6 0 3 10 2 27 7
11 42 26 26 20 10 7 0 4 3 28 6 1 2 14
3 3 19 4 4 6 20 14

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	> 20 ,and one or more of the following:
	1.| bias|	> 4 hPa
	2. SD	> 6 hPa
	3.PGE	> 25.

N.B. For stn ht > 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60010	28.3N	16.5W	2367	S7	72	0	0	33	2.0	-4.9	5.3
60445	36.2N	5.4E	1081	S8	102	1	1	1	0.8	4.8	4.9
60468	35.6N	6.2E	1052	S8	90	90	100	2	0.0	0.0	0.0
60511	35.3N	1.4E	1127	S8	100	85	85	2	0.7	14.2	14.2
60535	34.7N	3.3E	1144	S8	74	0	0	0	0.7	-6.3	6.3
60571	31.6N	2.2W	773	S8	99	1	1	2	1.8	-4.3	4.7
60670	24.6N	9.5E	1054	S8	91	0	0	0	1.2	8.0	8.1
63330	13.5N	39.5E	2070	MS	43	43	100	2	0.0	0.0	0.0
63333	11.1N	39.7E	1903	MS	46	1	2	7	1.5	4.7	4.9
63334	10.3N	37.7E	2515	MS	63	0	0	3	1.1	10.1	10.2
63402	7.7N	36.8E	1725	MS	73	3	4	0	1.1	6.4	6.5
63450	9.0N	38.8E	2354	MS	88	0	0	3	1.2	4.1	4.3
63471	9.6N	41.9E	1260	MS	49	0	0	0	1.0	9.6	9.7
63478	5.9N	43.6E	295	MS	34	0	0	3	1.0	7.0	7.1
68343	27.6S	25.6E	1228	S8	88	0	0	102	1.1	-9.5	9.6
68396	26.5S	31.3E	641	S8	45	0	0	0	0.7	4.2	4.3
68442	29.1S	26.3E	1359	S8	89	0	0	31	0.9	-4.8	4.9

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
24671	63.9N	135.9E	402	MS	101	0	0	11	2.2	4.0	4.6
30320	56.9N	105.7E	669	MS	100	55	55	2	1.4	-0.5	1.5
30554	54.5N	113.6E	995	MS	103	0	0	45	4.9	5.9	7.7
40743	36.2N	57.7E	941	MS	86	2	2	2	1.2	-5.4	5.5
40762	35.3N	59.2E	1333	MS	91	11	12	0	1.9	-12.6	12.7
41254	23.1N	57.7E	1755	S8	58	58	100	2	0.0	0.0	0.0
41466	13.7N	44.1E	1402	8	30	0	0	3	0.9	-5.7	5.8
44416	28.6N	81.6E	720	MS	62	4	6	3	2.2	4.5	5.0
44477	27.0N	87.4E	1445	S8	65	65	100	3	0.0	0.0	0.0
52602	38.8N	93.4E	2734	S	101	0	0	1	1.5	-6.1	6.3
52866	36.6N	101.8E	2262	S	101	0	0	0	1.3	-4.1	4.3
53588	39.0N	113.5E	2898	S	99	99	100	2	0.0	0.0	0.0
54587	39.1N	123.2E	-22	M	74	0	0	0	1.0	-4.3	4.4
56021	34.1N	95.8E	4176	S	101	0	0	1	0.8	-4.0	4.1
56144	31.8N	98.6E	3184	S	91	1	1	1	1.1	-4.7	4.8
56385	29.5N	103.3E	3049	S	100	0	0	6	1.8	-4.9	5.2
56444	28.5N	98.9E	3488	S	92	6	7	2	0.7	13.8	13.8
56462	29.0N	101.5E	2994	S	96	0	0	0	1.5	7.9	8.0

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83214	10.3S	54.9W	285	MS	48	0	0	6	2.4	-5.7	6.2
83235	12.4S	46.4W	604	MS	71	0	0	37	1.2	5.5	5.6
83319	14.7S	52.4W	315	MS	57	0	0	0	1.0	-4.8	4.9
83332	14.1S	46.4W	826	MS	70	0	0	1	1.1	12.1	12.1
83408	14.3S	43.8W	447	MS	68	0	0	37	1.2	8.7	8.8
83423	16.7S	49.3W	741	MS	70	0	0	0	1.0	-5.8	5.9
83488	17.8S	42.9W	1097	MS	70	70	100	1	0.0	0.0	0.0
83531	18.6S	46.5W	940	MS	68	1	1	29	2.4	-6.6	7.0
83587	19.9S	43.9W	850	MS	72	0	0	1	1.0	-7.0	7.1
83704	22.3S	53.9W	369	MS	56	1	2	13	4.2	-6.2	7.5
83773	23.1S	48.9W	793	S	31	0	0	0	1.1	-6.1	6.2
84401	5.2S	80.6W	49	MS	84	0	0	0	1.3	5.0	5.2
84425	5.9S	76.1W	179	MS	67	0	0	33	2.5	6.0	6.5
84455	6.5S	76.4W	281	MS	68	0	0	0	1.4	7.4	7.5
84472	7.1S	78.5W	2620	S	41	1	2	2	0.7	-6.0	6.0

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
84542	9.4S	77.6W	2750	S	31	1	3	3	1.4	5.0	5.2
84782	18.1S	70.3W	468	MS	87	0	0	2	1.6	7.6	7.8
85312	19.8S	63.9W	992	S	24	2	8	0	1.5	-11.0	11.1
85406	18.3S	70.3W	55	M	104	0	0	0	1.3	5.0	5.2

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
76625	20.6N	100.4W	1813	MS	22	0	0	0	1.4	-6.6	6.7
76632	20.1N	98.7W	2417	MS	31	0	0	65	0.8	-4.7	4.8
76658	19.2N	103.7W	494	MS	25	0	0	4	1.4	7.3	7.4
76698	19.6N	88.0W	20	MS	75	0	0	59	1.4	-4.3	4.5
76762	17.5N	99.5W	1865	MS	40	40	100	3	0.0	0.0	0.0
76775	17.1N	96.7W	1550	MS	47	0	0	0	1.2	4.2	4.4
76845	16.7N	92.6W	2276	MS	58	58	100	2	0.0	0.0	0.0
78718	14.4N	87.6W	626	MS	25	21	84	96	3.2	-12.8	13.2

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94328	22.4S	133.6E	623	MS	66	0	0	0	0.8	6.4	6.4
94955	41.6S	145.7E	684	MS	93	93	100	1	0.0	0.0	0.0
95952	41.9S	145.6E	560	MS	106	106	100	1	0.0	0.0	0.0

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
02045	67.8N	20.4E	408	M	100	100	100	1	0.0	0.0	0.0
03305	53.1N	3.9W	216	M	305	296	97	3	0.2	-4.2	4.2
16614	40.4N	21.3E	604	MS	79	0	0	0	1.1	-6.5	6.6

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	S	174	21	12	2	9.0	4.5	10.1
89108	89.0S	0.3W	2754	S	252	30	12	4	3.7	5.6	6.7
89345	89.7S	148.8W	620	S	345	65	19	2	4.5	-8.3	9.4
89606	78.5S	106.9E	3490	S7	99	11	11	9	3.3	4.3	5.4
89664	77.9S	166.7E	24	MS	82	5	6	12	5.2	-4.3	6.7

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :70.0 - 500.0 hPa

Elements monitored :TEMP in °C ; WIND in $m\ s^{-1}$

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 $m\ s^{-1}$ Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: US ACARs and ADS data are shown at the bottom of the table as US ACAR and ADS respectively.

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	84	1	15	1.4	0.6	85	0	80	4	6.7	1.4
AAH	24	13	25	1.8	1.2	24	0	17	0	11.6	2.4
AAL	5758	2	29	1.9	0.0	4911	0	22	1	8.2	0.8
AAR	1439	0	6	1.9	-0.6	1423	0	7	0	9.6	0.1
ACA	1652	1	11	2.0	-0.3	1521	0	6	0	6.8	0.9
ACI	56	2	41	1.0	0.4	49	2	41	6	7.5	0.2
AEA	506	0	24	2.8	1.3	440	0	18	0	9.8	1.5
AEL	730	0	6	1.8	-0.2	720	0	5	0	8.7	0.9
AEY	193	0	6	1.7	0.8	186	0	7	0	9.7	0.3
AFL	354	1	13	2.0	0.3	316	0	8	0	8.1	1.0
AFR	1820	1	12	1.7	0.0	1775	1	13	0	9.2	0.7
AIH	252	1	10	1.9	0.3	222	0	9	0	9.2	1.1
AJM	78	1	6	1.9	-0.7	70	0	6	0	9.3	1.1
AMM	20	0	5	1.8	0.6	20	0	10	0	10.5	-0.9
AMT	816	1	100	2.7	1.6	795	0	43	1	9.8	0.8
AMX	272	1	8	2.0	0.2	271	2	6	0	9.3	0.2
ANA	824	0	9	1.9	0.2	820	0	10	0	8.4	0.8
ANZ	2999	2	33	1.8	0.2	2909	3	35	1	8.6	1.1
AOM	807	0	6	1.7	0.8	771	0	8	0	9.7	0.4
ARG	35	3	29	3.9	1.2	35	0	26	3	21.1	-5.0
AUA	34	3	32	2.9	-0.8	23	0	9	0	5.7	-1.2
AVA	388	3	4	1.8	-0.1	383	0	3	0	9.5	1.0
AVN	45	0	9	1.8	0.2	41	0	5	0	7.9	-0.4
AXA	96	3	28	1.2	0.4	92	0	27	1	7.8	0.9
AZA	396	3	23	2.0	-0.1	321	0	16	1	10.2	0.1
BAL	705	0	15	1.7	-0.2	688	0	14	1	8.6	0.7
BAW	1704	1	23	2.1	-0.2	1443	0	18	0	7.6	1.1
BBB	83	0	13	1.6	-0.2	75	0	8	0	12.2	1.1
BWA	381	1	14	2.2	0.7	338	1	10	0	10.0	0.7
CAL	1595	1	7	1.7	-0.2	1592	0	7	0	9.0	0.4
CCA	179	1	7	2.4	0.3	173	1	36	0	10.5	-0.3
CDN	1900	0	9	1.8	0.3	1851	1	10	0	8.1	0.5
CES	362	1	7	1.6	0.2	354	2	10	0	10.3	0.6
CFG	1143	1	7	1.9	-0.9	1079	0	6	0	9.5	0.2
CKS	406	1	100	1.8	1.1	394	1	43	3	8.3	0.8
CKT	233	3	21	2.6	0.6	220	0	13	0	9.9	0.4
CLX	344	1	12	2.1	-0.6	314	0	6	0	6.8	0.5
CMI	557	0	4	1.7	0.6	568	1	6	0	7.9	0.7
CMM	620	2	18	1.9	0.1	599	0	18	0	10.2	1.0
COA	1854	1	35	2.2	0.5	1602	0	31	1	10.7	1.1
CPA	84	1	5	1.6	-0.4	85	0	9	0	8.2	1.5
CRL	769	1	7	2.1	0.8	745	0	6	0	9.0	0.6
CSN	69	1	6	2.0	0.4	69	1	6	0	11.1	0.7
CTB	212	1	6	1.7	-0.2	208	0	4	0	7.3	0.5
CTM	62	0	24	2.2	-1.1	60	0	27	0	10.4	0.3
CUB	445	1	9	2.7	1.4	431	0	100	4	12.1	0.7
DAL	5678	1	33	2.2	0.4	4830	0	29	1	8.0	0.6
DBY	179	2	4	1.5	-0.7	177	1	4	0	9.5	-0.2
DHL	191	4	43	4.7	-3.5	150	1	11	1	10.5	0.8
DLH	2882	2	18	2.1	-0.1	2561	0	13	0	8.5	0.7
DOA	20	0	0	1.3	0.2	20	0	0	0	6.2	-0.4
EIA	361	0	32	1.5	0.5	345	3	35	1	9.3	0.7
ELY	131	0	13	1.7	-0.3	128	0	10	0	7.5	1.2
EVA	1649	0	7	1.8	-0.5	1662	1	8	0	9.4	0.1
EWW	110	3	20	2.3	0.3	89	2	26	1	15.2	3.9
FDX	911	1	19	1.8	0.7	892	1	18	1	8.7	0.4
FIN	303	1	17	1.8	-0.1	240	0	8	0	6.0	1.1
FJI	664	2	31	1.5	0.5	656	8	37	1	8.2	0.4
FOM	174	6	42	1.3	0.4	164	0	39	0	7.6	1.6

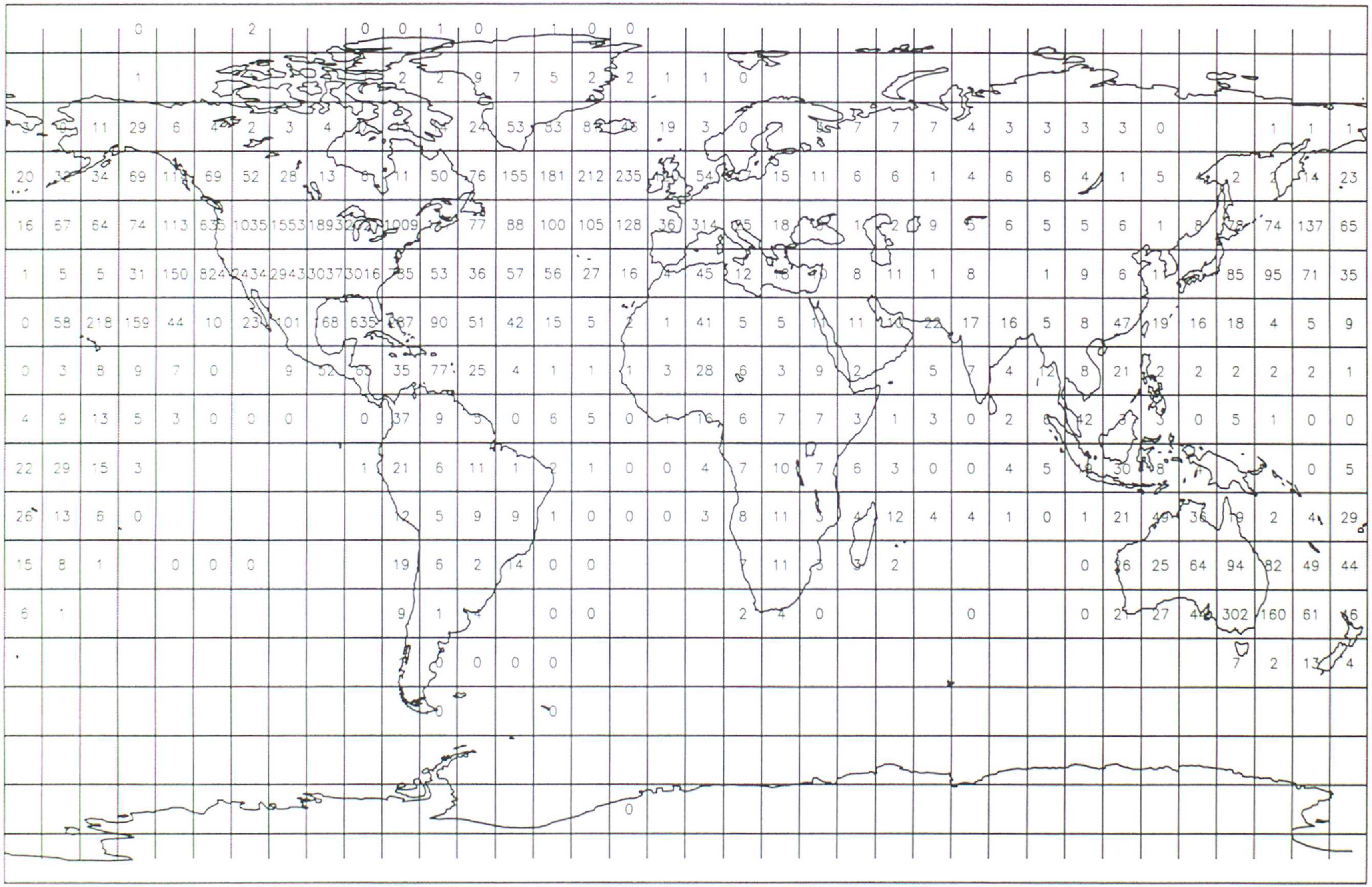
	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
GAF	72	0	38	2.2	-0.7	47	0	28	0	8.3	1.0
GCO	73	1	22	1.6	1.3	86	6	28	0	12.9	2.8
GHA	75	0	7	2.0	1.2	66	0	3	0	8.6	2.1
GIA	43	2	21	1.3	0.9	42	0	19	2	8.6	0.4
GTI	28	4	7	2.5	0.8	29	0	14	3	15.6	1.9
HAL	2637	0	34	1.6	0.3	2597	0	34	1	9.5	1.0
HLF	196	1	18	2.0	-0.9	166	1	9	0	7.9	-0.1
HRH	84	10	75	1.7	1.0	72	0	74	0	12.0	0.8
IBE	2557	1	24	2.2	0.6	2254	1	19	0	9.6	0.4
ICE	779	1	31	2.2	-0.2	583	0	19	1	6.7	0.1
JAL	5797	0	6	1.7	0.2	5784	0	6	0	8.2	0.7
KAL	2875	1	8	1.8	-0.3	2827	0	9	0	9.2	0.6
KLM	3293	0	23	1.8	0.1	3068	0	22	0	8.3	0.8
LAN	22	27	32	2.9	2.1	22	0	14	0	15.7	1.1
LAP	34	12	50	5.3	0.1	34	0	62	0	31.8	-18.1
LDA	198	1	28	2.2	-0.7	173	0	21	0	9.4	1.2
LDI	535	1	27	1.8	-0.1	469	0	22	0	9.3	-0.2
LEI	234	0	15	2.0	0.3	212	0	11	0	11.3	0.7
LIB	451	0	4	1.9	0.9	442	0	5	0	10.9	0.8
LOB	22	9	45	3.8	1.5	20	0	30	0	8.6	1.3
LOT	175	0	32	2.5	-1.5	131	1	21	1	8.5	0.7
LTE	22	0	0	1.8	-0.6	22	0	0	0	5.5	1.3
LTU	789	1	22	1.9	0.1	649	0	14	0	9.5	0.4
MAS	298	0	9	2.0	-0.7	277	0	63	1	9.8	0.7
MDA	145	0	2	1.8	0.2	145	0	6	0	10.9	0.1
MON	63	5	32	2.8	0.6	51	0	20	2	11.8	1.9
MPD	274	1	14	2.5	1.6	248	0	8	0	9.0	0.3
MPH	782	1	12	2.0	-0.5	727	0	7	0	9.2	0.4
NCA	550	1	4	1.5	0.3	543	1	6	0	8.8	0.4
NWA	9845	0	15	1.9	0.5	9373	0	12	1	8.4	0.6
OAL	27	4	26	3.2	2.0	20	0	5	0	9.1	0.6
PAC	182	3	35	1.9	0.4	162	7	30	1	9.3	0.4
PAL	1156	1	10	1.7	-0.3	1136	1	10	0	8.8	0.5
PAO	259	1	45	1.4	0.3	239	0	45	1	7.8	1.1
QFA	1295	0	25	1.6	0.3	1313	7	31	1	7.6	0.5
RAF	111	1	6	1.6	0.8	108	0	6	0	9.8	0.5
RAM	75	3	16	1.8	-0.8	74	0	18	0	14.9	0.4
RCH	609	2	24	2.4	0.5	579	2	23	1	9.8	1.2
RJA	53	0	23	2.1	0.5	45	0	16	0	6.4	1.6
RKA	91	0	2	2.1	-0.1	65	0	3	0	8.8	1.5
ROY	32	0	19	2.5	0.3	28	0	11	0	9.2	0.4
RRR	124	1	16	1.7	0.4	122	0	16	0	7.7	0.2
SAA	226	1	8	1.7	0.3	210	0	10	1	10.5	0.4
SAB	60	2	18	2.1	-0.1	51	0	8	0	4.9	0.7
SAS	1071	0	1	1.7	-0.1	1052	0	2	0	7.1	0.4
SCX	354	5	45	1.8	0.1	334	0	40	0	8.2	0.8
SIA	1154	0	6	1.7	-0.6	1157	0	7	0	9.1	0.2
SLR	106	0	14	1.7	-0.5	106	0	13	1	8.0	0.1
SOL	73	0	19	0.9	0.2	67	0	21	3	7.1	0.0
SPP	220	0	24	2.2	0.3	178	2	47	1	9.0	1.4
SVA	56	0	4	1.4	0.2	59	0	100	2	8.2	0.8
SWR	195	1	24	1.8	0.0	152	0	11	0	6.1	0.6
TAP	583	1	6	1.6	-0.2	577	1	7	0	10.5	0.6
TBA	29	17	34	4.0	2.4	29	0	34	0	20.4	-3.0
TCO	20	0	5	2.1	-1.3	21	0	5	0	7.4	1.5
THA	464	0	7	1.7	-0.3	465	0	9	0	10.2	-0.1
TOW	81	1	31	2.6	0.6	67	1	21	0	10.4	0.4
TPA	26	0	8	1.1	-0.1	25	0	8	0	6.5	-0.8
TSC	37	3	35	1.8	0.2	25	0	20	0	5.4	0.9

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
TWA	1667	1	34	2.1	0.0	1214	0	23	1	9.1	0.7
UAL	87160	1	75	1.4	-0.2	86741	0	75	2	6.2	0.3
UNS	813	0	76	1.7	0.8	811	0	75	0	7.5	1.1
UPS	1077	1	38	1.8	0.3	1018	0	34	1	8.0	0.9
USA	357	0	30	2.0	-0.1	259	0	100	3	7.5	0.8
VIR	353	1	13	2.0	-0.6	319	0	9	0	8.5	0.8
VKG	60	2	5	1.5	0.3	58	2	3	0	5.5	0.7
VRG	210	4	23	2.3	1.1	212	0	22	0	12.9	0.6
VSP	157	1	5	1.8	0.4	159	1	64	2	9.3	0.0
WOA	88	0	11	1.7	0.5	85	0	6	0	7.9	-0.3
AN	18200	0	1	1.4	0.1	18200	0	0	0	6.7	0.7
BA	21111	0	2	1.5	0.5	21059	0	15	0	6.6	1.1
IT	654	0	44	1.7	0.4	654	0	44	0	5.8	1.1
KL	8680	0	18	1.5	0.8	8673	0	24	0	7.2	0.6
LH	3046	0	1	1.6	0.8	3119	0	1	0	6.9	1.0
MK	1994	0	0	1.9	1.5	1984	0	0	0	7.6	1.0
QF	10506	0	2	1.2	0.5	10505	0	1	0	6.4	0.8
SA	3478	1	7	2.9	1.8	3476	0	51	0	7.0	0.9
SV	1424	0	0	1.2	0.5	1411	0	1	0	6.6	0.6
UA	1516	1	27	1.8	0.2	1588	0	25	1	8.2	0.5
WA	514	10	12	1.7	0.4	503	7	44	1	16.1	-4.2
XX	3054	1	4	1.8	0.5	3565	0	30	1	14.0	0.2
N	720	2	31	2.4	0.7	616	2	25	1	9.7	0.9
ADS	246	0	0	1.3	0.0	246	0	0	0	5.6	0.0
US ACAR	478164	0	9	1.4	0.1	478005	0	9	0	6.3	0.5

MEAN DAILY COUNT OF AIRCRAFT 70 – 500 HPA FIGURE 3

APRIL 1998

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED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1 5 5 31 150 824 2434 2943 3037 3016 735 53 36 57 56 27 16 4 45 12 18 10 8 11 1 8 1 9 6 1 85 95 71 35
0 58 218 159 44 10 23 101 168 635 787 90 51 42 15 5 2 1 41 5 5 11 11 10 22 17 16 5 8 47 19 16 18 4 5 9
0 3 8 9 7 0 9 52 63 35 77 25 4 1 1 1 3 28 6 3 9 2 5 7 4 12 8 21 2 2 2 2 2 1
4 9 13 5 3 0 0 0 0 37 9 5 0 6 5 0 1 16 6 7 7 3 1 3 0 2 6 42 3 3 0 5 1 0 0
22 29 15 3 1 21 6 11 1 2 1 0 0 4 7 10 7 6 3 0 0 4 5 18 30 8 0 5
26 13 6 0 12 5 9 9 1 0 0 0 3 8 11 3 4 12 4 4 1 0 1 21 49 36 19 2 4 29
15 8 1 0 0 0 19 6 2 14 0 0 7 11 3 3 2 0 26 25 64 94 82 49 44
6 1 9 1 4 0 0 2 4 0 0 0 21 27 44 302 160 61 16
0 0 0 0 7 2 13 4
0 0
0

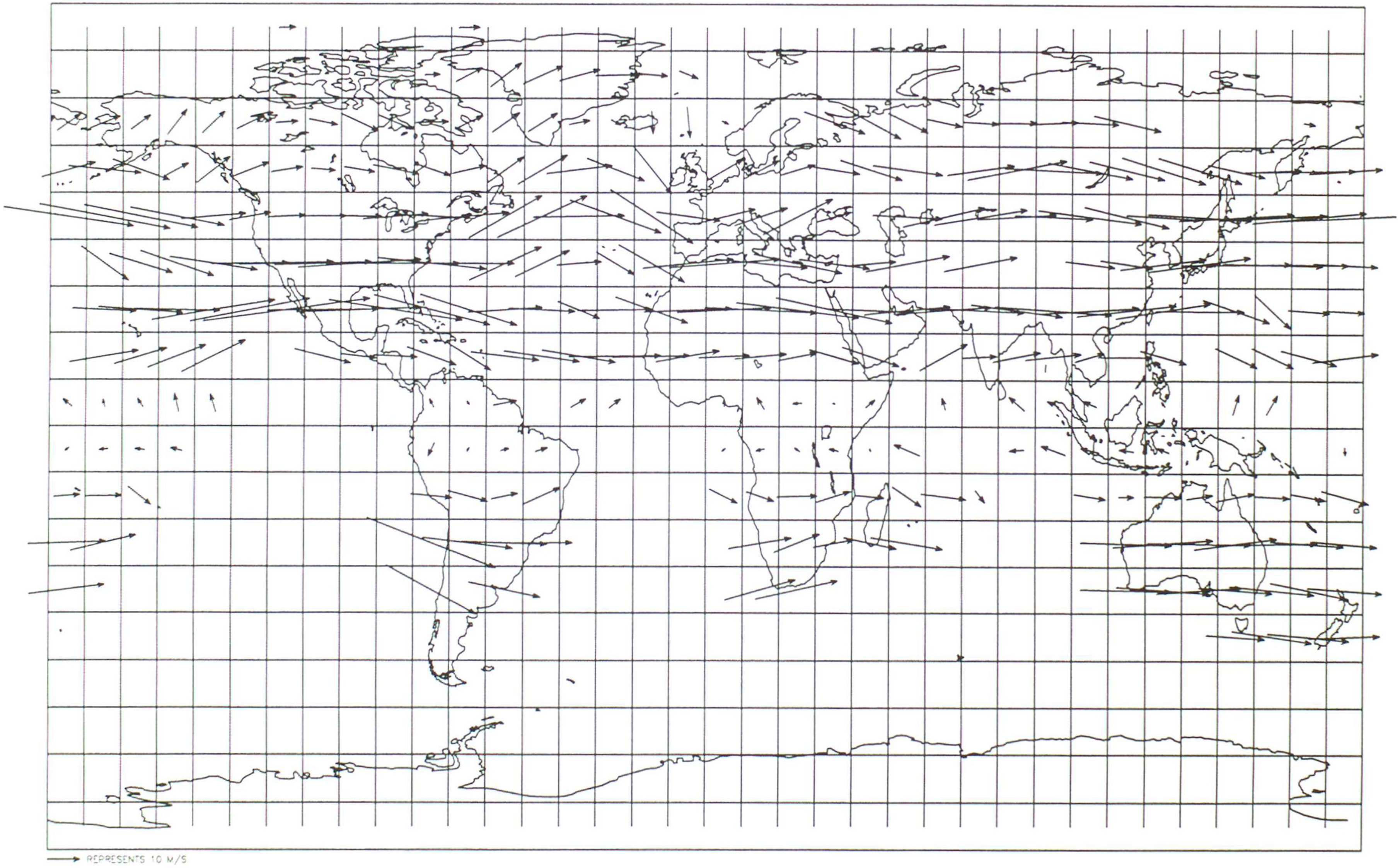
AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA

FIGURE 4

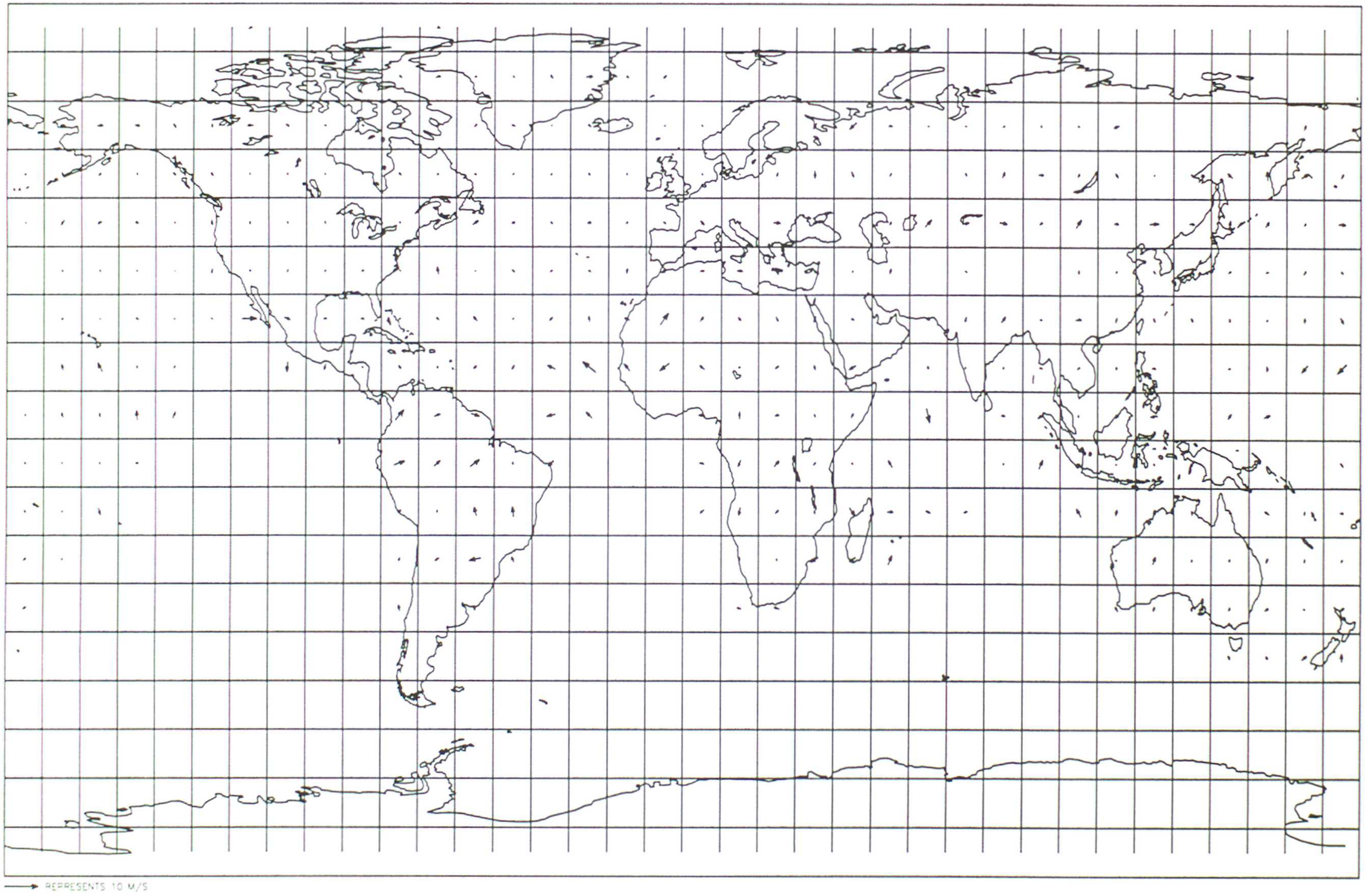
APRIL 1998

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

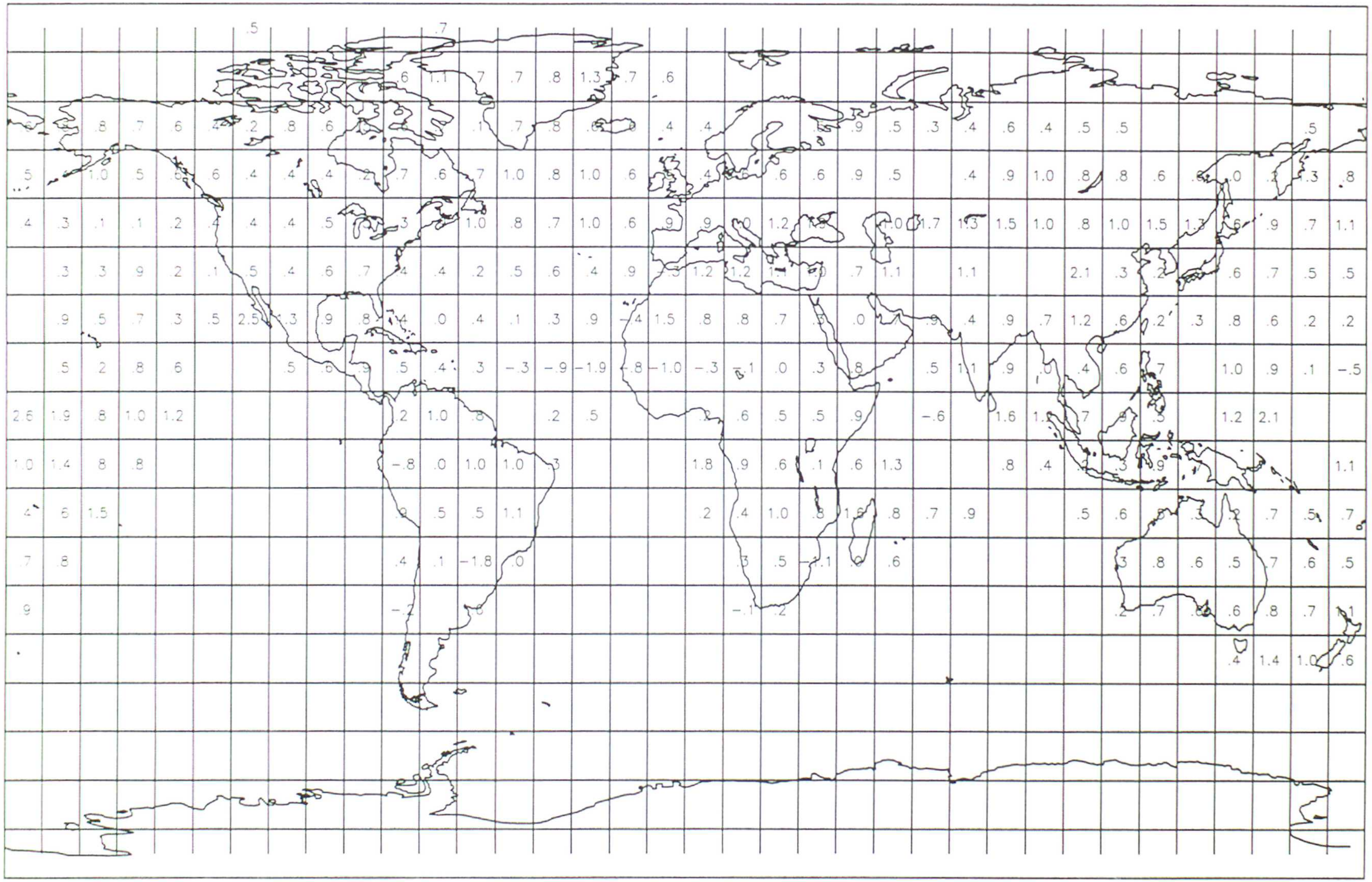
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT MEAN O-B WINDS BETWEEN 70 AND 500 HPA FIGURE 5
APRIL 1998
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT : MEAN O–B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
APRIL 1998
OBSERVATIONS WITH O–B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT


.5 .7
.6 1.1 .7 .7 .8 1.3 .7 .6
.6 .8 .7 .6 .4 .2 .8 .6 .1 .7 .8 .6 .4 .4 .9 .5 .3 .4 .6 .4 .5 .5 .5
.5 1.0 .5 .6 .6 .4 .4 .4 .2 .7 .6 .7 1.0 .8 1.0 .6 .4 .6 .6 .9 .5 .4 .9 1.0 .8 .8 .6 .0 .3 .8
.4 .3 .1 .1 .2 .4 .4 .4 .5 .3 1.0 .8 .7 1.0 .6 .9 .9 .0 1.2 .0 1.7 1.3 1.5 1.0 .8 1.0 1.5 1.7 .6 .9 .7 1.1
.3 .3 .9 .2 .1 .5 .4 .6 .7 .4 .4 .2 .5 .6 .4 .9 .3 1.2 1.2 1.1 .0 .7 1.1 1.1 2.1 .3 .2 .6 .7 .5 .5
.9 .5 .7 .3 .5 2.5 .3 .9 .8 .4 .0 .4 .1 .3 .9 .4 1.5 .8 .8 .7 .5 .0 .9 .4 .9 .7 1.2 .6 .2 .3 .8 .6 .2 .2
.5 .2 .8 .6 .5 .6 .9 .5 .4 .3 –.3 –.9 –1.9 .8 –1.0 –.3 –.1 .0 .3 .8 .5 1.1 .9 .0 .4 .6 .7 1.0 .9 .1 –.5
2.6 1.9 .8 1.0 1.2 .2 1.0 .8 .2 .5 .2 .6 .5 .5 .9 –.6 1.6 1.1 .7 .9 .5 1.2 2.1
1.0 1.4 .8 .8 –.8 .0 1.0 1.0 .3 1.8 .9 .6 .1 .6 1.3 .8 .4 .7 .3 .9 1.1
.4 .5 1.5 .9 .5 .5 1.1 .2 .4 1.0 .8 1.6 .8 .7 .9 .5 .6 .5 .3 .2 .7 .5 .7
.7 .8 .4 .1 –1.8 .0 .3 .5 –1.1 .0 .6 .3 .8 .6 .5 .7 .6 .5
.9 –.2 .6 –.1 .2 .2 .7 .6 .6 .8 .7 .1
.4 1.4 1.0 .6

AIRCRAFT : RMS O-B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7
APRIL 1998
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

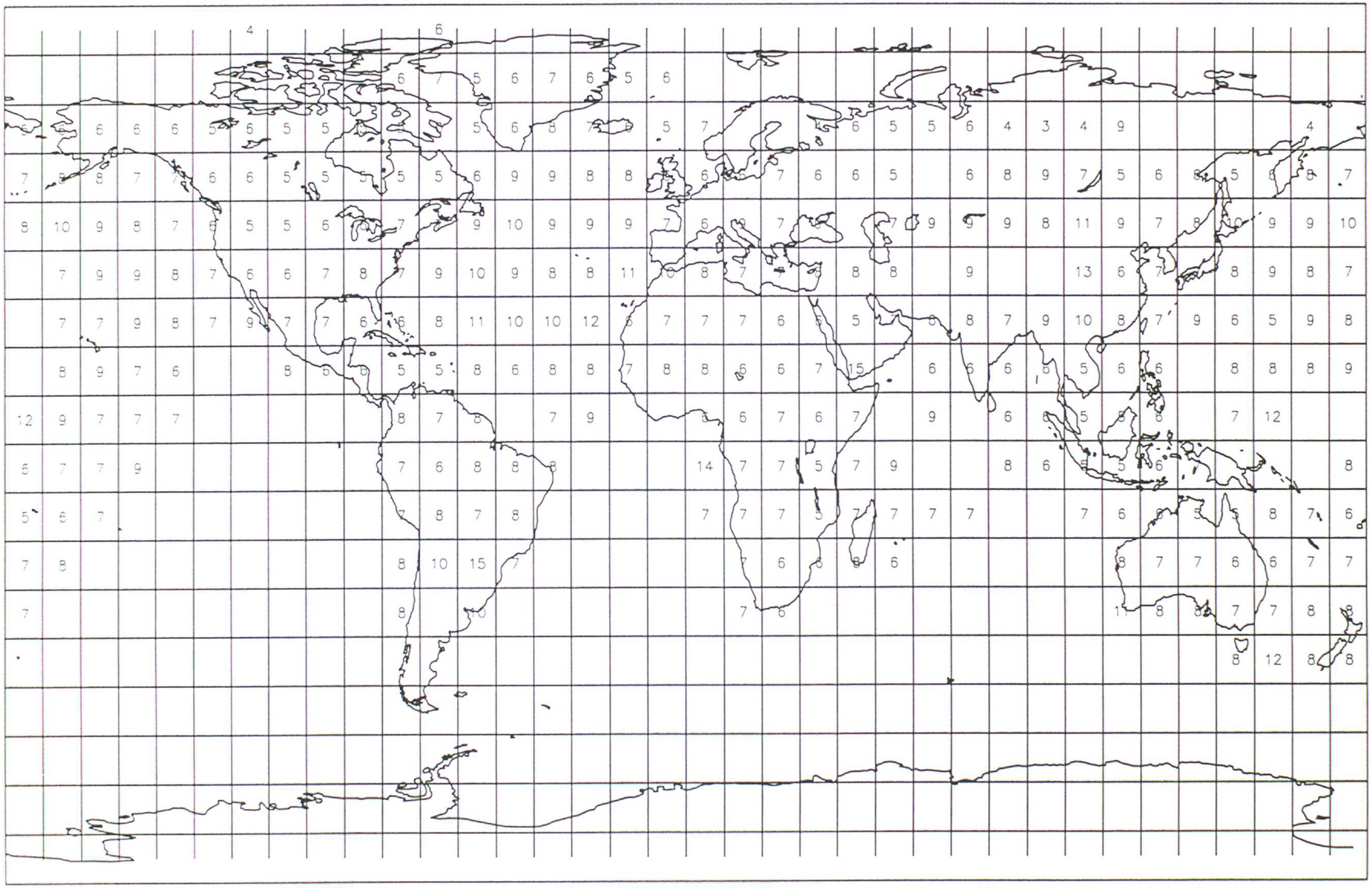

4 6
6 7 5 6 7 6 5 6
5 6 6 6 6 5 6 5 5 5 6 8 7 6 5 7 6 5 5 6 4 3 4 9 4
7 8 8 7 7 6 6 5 5 5 5 5 6 9 9 8 8 6 5 7 6 6 5 6 8 9 7 5 6 8 5 6 8 7
8 10 9 8 7 6 5 5 6 7 7 9 10 9 9 9 7 6 9 7 9 7 9 9 8 11 9 7 8 10 9 9 10
7 9 9 8 7 6 6 7 8 7 9 10 9 8 8 11 10 8 7 8 8 8 9 13 6 7 8 9 8 7
7 7 9 8 7 9 7 7 6 6 8 11 10 10 12 6 7 7 7 6 5 5 8 8 7 9 10 8 7 9 6 5 9 8
8 9 7 6 8 6 6 5 5 8 6 8 8 7 8 8 6 6 7 15 6 6 6 6 5 6 6 8 8 8 9
12 9 7 7 7 8 7 8 7 9 6 6 7 6 7 9 6 6 5 8 6 7 12
6 7 7 9 7 6 8 8 8 14 7 7 5 7 9 8 6 6 5 6 8
5 6 7 7 8 7 8 7 7 7 5 7 7 7 7 7 6 6 5 5 8 7 6
7 8 8 10 15 7 7 6 8 8 6 8 7 7 6 6 7 7
7 8 10 7 6 11 8 8 7 7 8 8
8 12 8 8

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
28722	00	Z	200	55/ 56	25	1	73.4	-25.0	77.6	4
33658	00	Z	100	48/ 26	11	0	46.3	162.3	168.7	4
33791	12	Z	50	48/ 33	12	0	78.2	203.7	218.2	4
33946	00	Z	100	45/ 34	13	0	31.0	163.4	166.3	5
41977	00	Z	150	22/ 92	13	1	123.7	-10.2	124.1	7
42027	00	Z	1000	34/ 75	19	0	27.0	37.1	45.9	6
42027	12	Z	1000	34/ 75	22	1	41.5	-30.4	51.4	7
42101	00	Z	150	30/ 76	23	0	114.2	-64.6	131.2	5
42101	12	Z	200	30/ 76	19	0	85.6	59.2	104.0	6
42339	00	Z	200	26/ 73	25	0	87.2	6.7	87.5	5
42339	12	Z	200	26/ 73	27	0	97.7	34.6	103.6	7
42361	00	Z	150	26/ 78	10	0	88.0	-26.6	91.9	4
42361	12	Z	150	26/ 78	11	0	104.8	8.5	105.1	4
42369	00	Z	200	27/ 81	18	1	103.9	20.3	105.9	6
42397	00	Z	250	27/ 88	26	1	79.4	-44.7	91.1	7
42410	12	Z	150	26/ 92	16	0	107.7	43.8	116.2	5
42492	00	Z	150	26/ 85	22	1	110.1	-70.5	130.7	7
42492	12	Z	100	26/ 85	22	0	106.8	-57.7	121.4	5
42647	12	Z	100	23/ 73	17	2	90.7	127.4	156.3	7
42701	00	Z	150	23/ 85	28	0	96.2	-3.4	96.2	4
42701	12	Z	200	23/ 85	14	1	104.3	55.5	118.2	6
42724	00	Z	200	24/ 91	15	0	91.3	12.3	92.1	6
42867	12	Z	100	21/ 79	18	0	99.5	98.2	139.8	7
42874	12	Z	200	21/ 82	15	0	63.4	51.5	81.7	5
42971	12	Z	200	20/ 86	25	0	83.4	21.7	86.2	6
43003	12	Z	150	19/ 73	25	0	69.4	133.2	150.2	7
43014	00	Z	150	20/ 75	2	14	20.5	-254.5	255.3	7
43014	12	Z	100	20/ 75	2	11	39.0	-221.0	224.4	7
43128	00	Z	250	17/ 78	26	0	75.8	-42.5	86.9	4
43185	00	Z	150	16/ 81	27	0	98.0	-35.7	104.3	5
43185	12	Z	200	16/ 81	28	0	104.2	47.5	114.5	5
43192	00	Z	150	15/ 74	23	0	98.7	-31.1	103.4	5
43192	12	Z	150	15/ 74	26	0	69.1	92.5	115.5	5
43279	12	Z	100	13/ 80	21	0	111.3	58.8	125.9	4
43285	00	Z	200	13/ 75	21	0	65.4	-75.0	99.5	6
43333	00	Z	150	12/ 93	22	0	79.6	-55.2	96.8	4
43346	00	Z	100	11/ 80	27	0	74.7	-108.4	131.7	5
43371	12	Z	250	8/ 77	24	0	63.7	60.4	87.8	6
53772	00	Z	1000	38/ 113	27	0	20.4	24.0	31.5	5
54337	00	Z	200	41/ 121	28	0	80.1	50.4	94.7	5
54497	00	Z	150	40/ 124	24	0	43.3	98.2	107.3	5
54497	12	Z	150	40/ 124	24	0	68.8	75.4	102.0	4
58424	00	Z	200	31/ 117	28	0	18.8	74.3	76.6	4
62414	12	Z	150	24/ 33	17	2	81.2	88.1	119.8	4
84628	12	Z	850	-12/ -77	25	0	7.8	-68.8	69.2	9
89009	00	Z	500	-90/ 0	14	3	78.5	46.9	91.5	8
89664	00	Z	1000	-78/ 167	19	3	32.8	-33.2	46.6	9
96237	00	Z	200	-2/ 106	12	0	51.5	-102.9	115.1	6

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – APRIL 1998

FIGURE 8

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1390

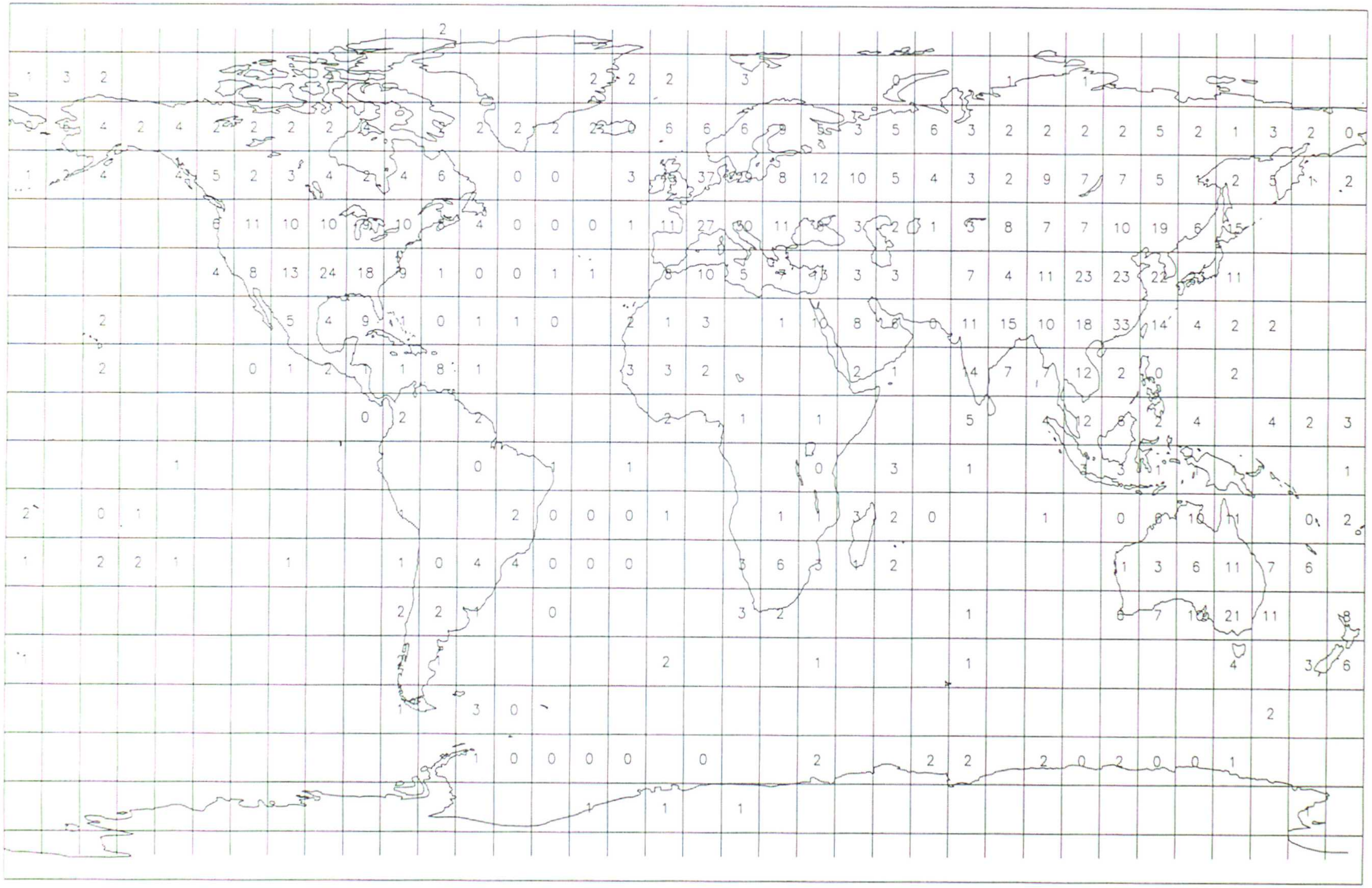

2
1 3 2 2 2 2 3 0 1 1
6 4 2 4 2 2 2 2 4 1 2 2 2 23 0 6 6 6 9 5 3 5 6 3 2 2 2 2 5 2 1 3 2 0
1 2 4 4 5 2 3 4 2 4 6 0 0 3 8 37 2 8 12 10 5 4 3 2 9 7 7 5 1 2 5 1 2
6 11 10 10 9 10 4 0 0 0 1 11 27 30 11 6 3 2 0 1 3 8 7 7 10 19 6 15
4 8 13 24 18 9 1 0 0 1 1 6 10 5 13 3 3 7 4 11 23 23 22 3 11
2 5 4 9 1 0 1 1 0 2 1 3 1 10 8 6 0 11 15 10 18 33 14 4 2 2
2 0 1 2 1 1 8 1 3 3 2 2 1 14 7 7 12 2 0 2
0 2 2 2 1 1 5 4 12 8 2 4 4 2 3
1 0 1 1 0 3 1 3 1 1
2 0 1 2 0 0 0 1 1 1 3 2 0 1 0 8 10 11 0 2
1 2 2 1 1 1 0 4 4 0 0 0 3 6 3 1 2 1 3 6 11 7 6
2 2 1 0 3 2 1 6 7 10 21 11 8
1 2 1 1 4 3 6
1 3 0 2
1 0 0 0 0 0 2 2 2 2 0 2 0 0 1
1 1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 100.0 hPa
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored		
	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.2	
SELECTION CRITERIA	: $>$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.	

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
42492	00	V	200	26/ 85	11	1	16	-14.9	14.3	15.1	1
42701	00	V	150	23/ 85	10	0	20	-0.4	-1.8	16.7	3
43014	12	V	200	20/ 75	16	2	11	11.7	12.5	15.4	1
60571	12	V	250	32/ -2	15	0	6	5.9	-2.5	16.9	2
60680	00	V	150	23/ 6	11	0	36	-11.4	-6.0	15.1	1
60680	12	V	100	23/ 6	13	1	21	8.7	7.7	17.4	1
62337	00	V	100	31/ 34	13	0	30	8.7	12.5	19.1	1
83612	00	V	150	-20/ -55	21	0	14	4.5	2.4	16.8	1
83612	12	V	200	-20/ -55	19	0	15	0.7	6.1	16.2	2

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – APRIL 1998 FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1221

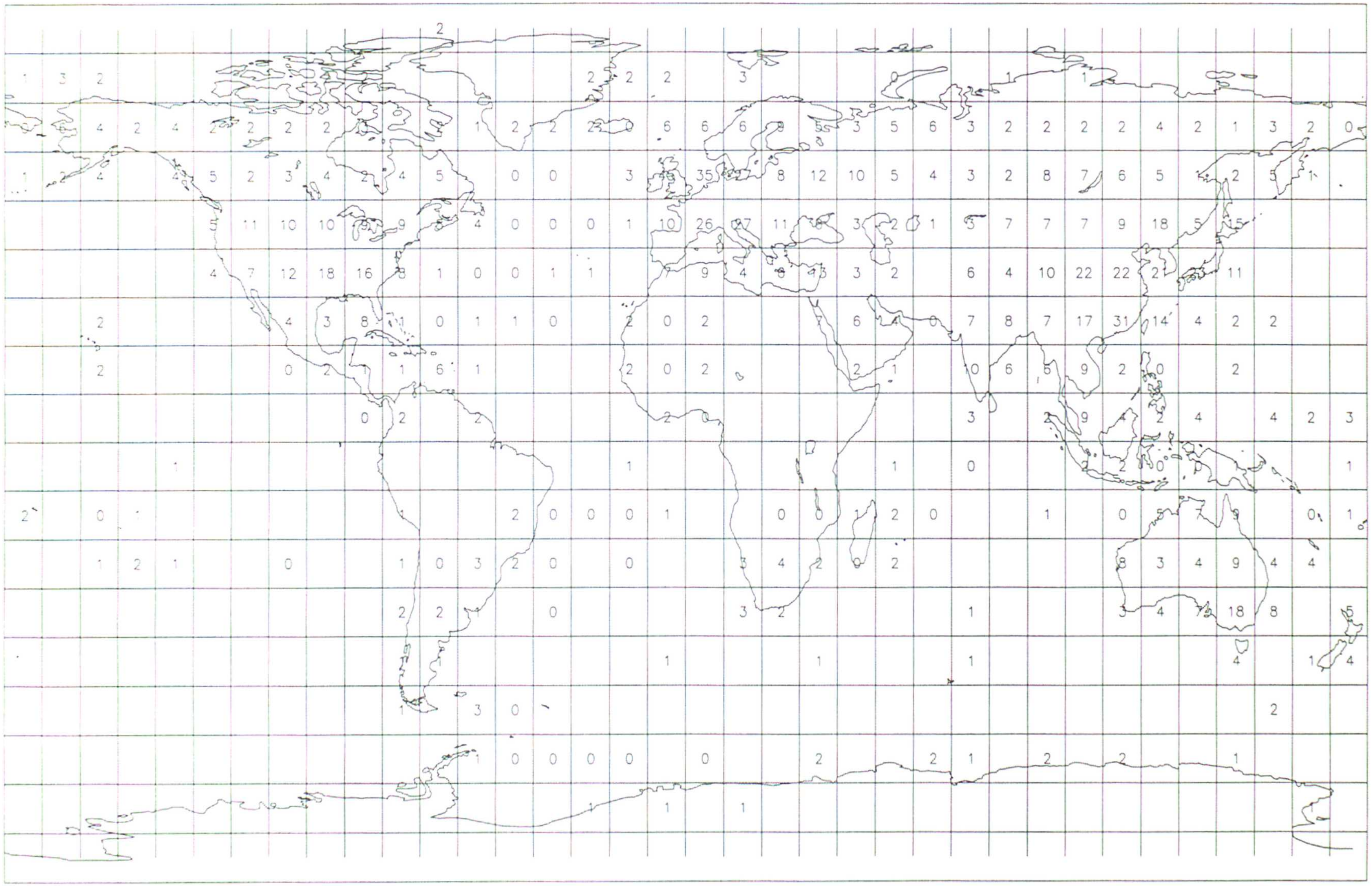

2
1 3 2 2 2 2 3 1 1
4 2 4 2 2 2 2 1 2 2 2 0 6 6 6 9 5 3 5 6 3 2 2 2 2 4 2 1 3 2 0
1 2 4 4 5 2 3 4 2 4 5 0 0 3 8 35 8 12 10 5 4 3 2 8 7 6 5 1 2 5 1
5 11 10 10 9 8 4 0 0 0 1 10 26 27 11 8 3 2 1 3 7 7 7 9 18 5 15
4 7 12 18 16 8 1 0 0 1 1 7 9 4 8 3 3 2 6 4 10 22 22 21 11
2 4 3 8 1 0 1 1 0 2 0 2 7 6 4 0 7 8 7 17 31 14 4 2 2
2 0 2 1 1 6 1 2 0 2 2 1 0 6 5 9 2 0 2
0 2 2 2 0 3 2 9 4 2 4 4 2 3
1 1 1 0 1
2 0 1 2 0 0 0 1 0 0 1 2 0 1 0 5 7 9 0 1
1 2 1 0 1 0 3 2 0 0 3 4 2 0 2 8 3 4 9 4 4
2 2 1 0 3 2 1 3 4 7 18 8 5
1 1 1 1 4 1 4
1 3 0 2
1 0 0 0 0 0 2 2 1 2 2 1
1 1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
17240	00	DD	38/ 31	25	-11.5	3.5	23.2
17280	00	DD	38/ 40	26	-10.3	3.6	14.9
42361	12	DD	26/ 78	8	-14.3	5.5	11.5
42724	00	DD	24/ 91	12	-11.0	6.1	12.1
60571	00	DD	32/ -2	12	10.4	6.1	13.1
62337	00	DD	31/ 34	22	-13.1	4.1	12.7
62337	12	DD	31/ 34	24	-20.8	2.5	28.7
76458	00	DD	23/-106	22	-24.3	2.0	19.4
78970	12	DD	11/ -61	20	25.0	7.9	21.3

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: April, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES, METEOSAT, GMS, INSAT.

Standard of comparison :Background field from Bracknell global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

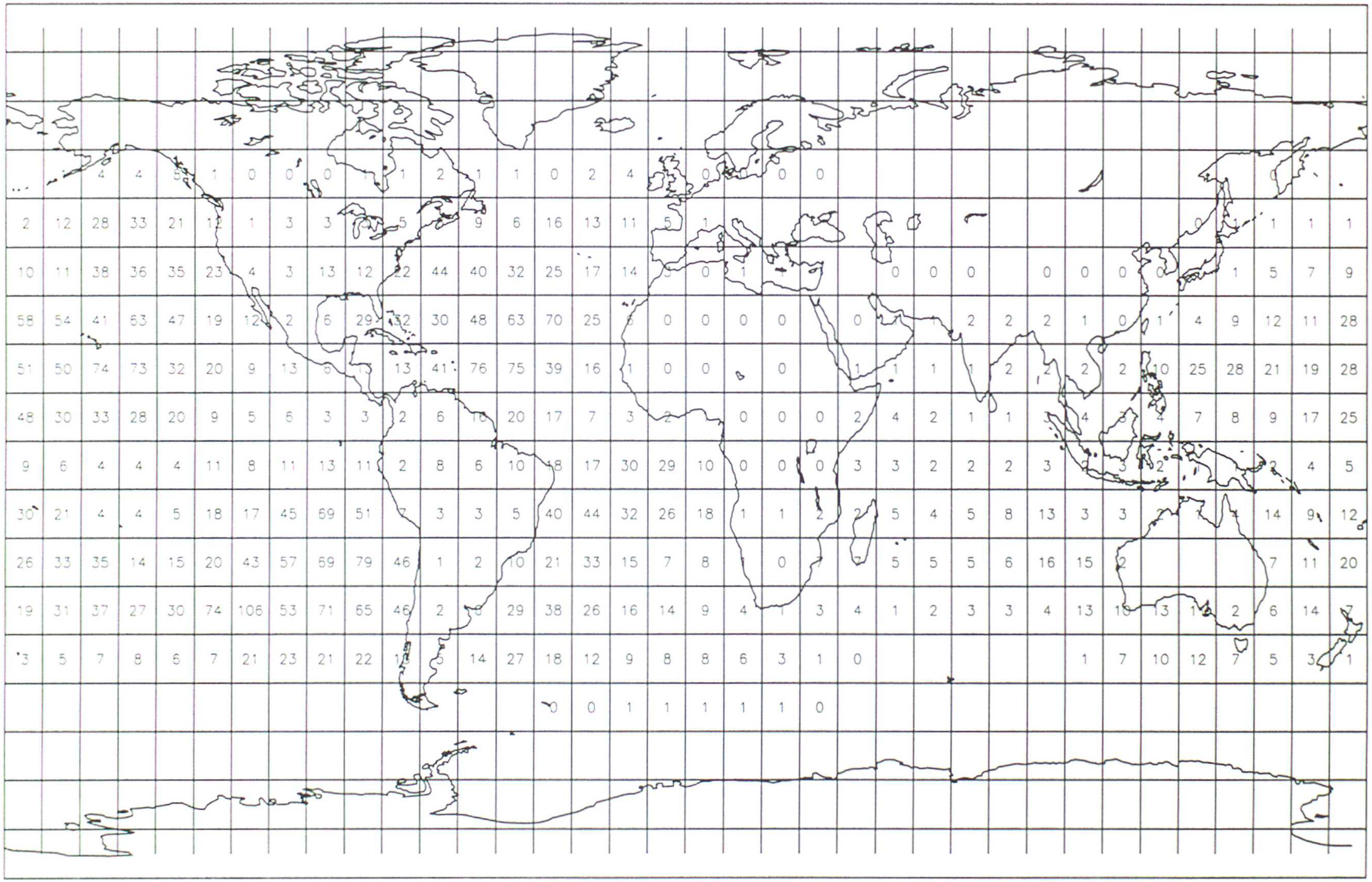
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

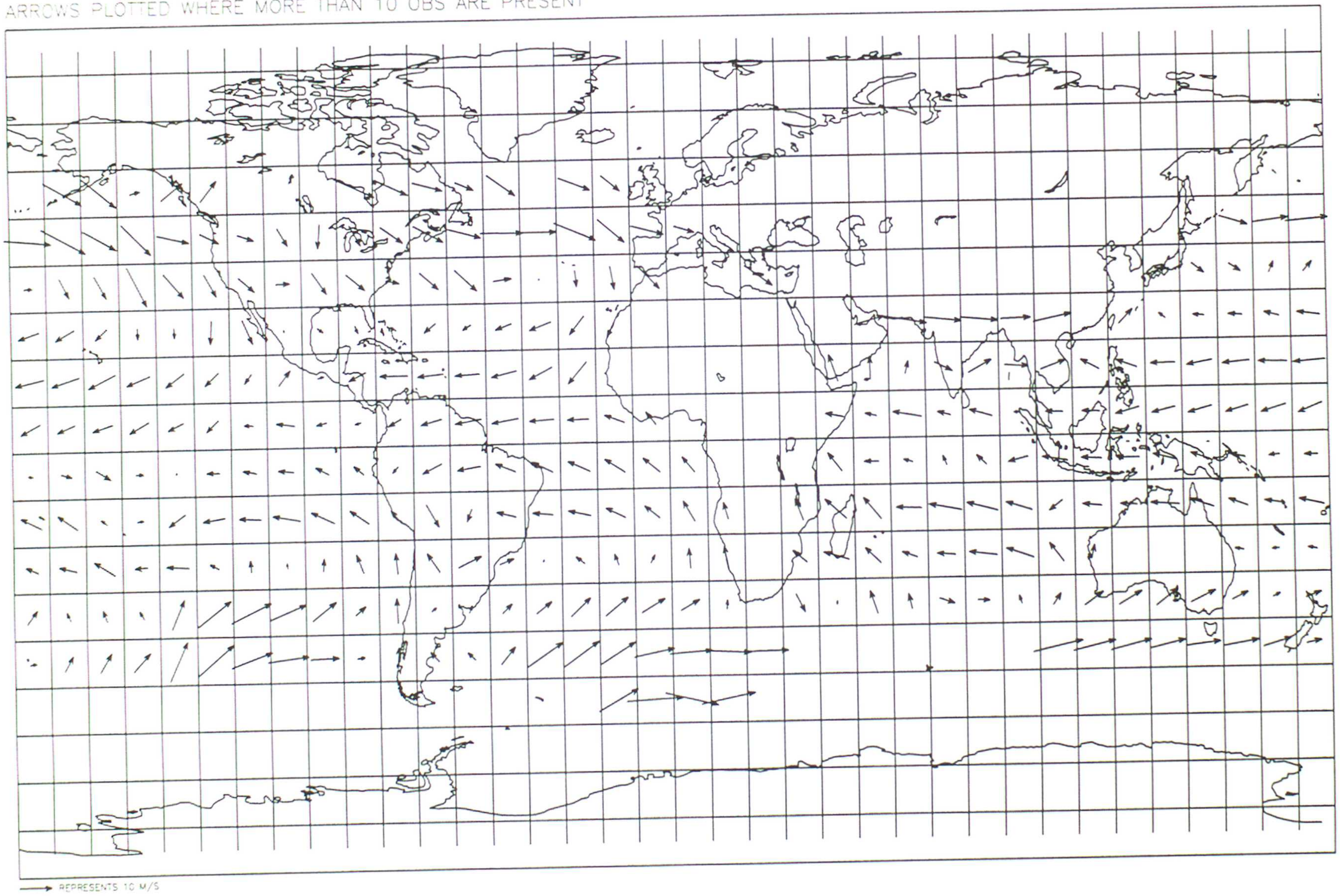
AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
APRIL 1998



	1	4	4	5	1	0	0	0	1	1	2	1	1	0	2	4		0	0	0	0												0		
2	12	28	33	21	12	1	3	3	3	5		9	6	16	13	11	5	1													0	1	1	1	1
10	11	38	36	35	23	4	3	13	12	22	44	40	32	25	17	14	3	0	1	1			0	0	0		0	0	0	0		1	5	7	9
58	54	41	63	47	19	12	2	6	29	32	30	48	63	70	25	6	0	0	0	0		0	1	1	2	2	2	1	0	1	4	9	12	11	28
51	50	74	73	32	20	9	13	6	13	13	41	76	75	39	16	1	0	0		0		1	1	1	1	2	2	2	2	10	25	28	21	19	28
48	30	33	28	20	9	5	6	3	3	2	6	16	20	17	7	3	2		0	0	0	2	4	2	1	1	3	4	3	4	7	8	9	17	25
9	6	4	4	4	11	8	11	13	11	2	8	6	10	18	17	30	29	10	0	0	0	3	3	2	2	2	3	2	3	2	1	1	2	4	5
30	21	4	4	5	18	17	45	69	51	7	3	3	5	40	44	32	26	18	1	1	2	2	5	4	5	8	13	3	3	2	1	4	14	9	12
26	33	35	14	15	20	43	57	69	79	46	1	2	10	21	33	15	7	8	1	0	7	7	5	5	5	6	16	15	2				7	11	20
19	31	37	27	30	74	106	53	71	65	46	2	8	29	38	26	16	14	9	4	1	3	4	1	2	3	3	4	13	10	13	1	2	6	14	7
3	5	7	8	6	7	21	23	21	22	13	5	14	27	18	12	9	8	8	6	3	1	0						1	7	10	12	7	5	3	1
														0	0	1	1	1	1	1	0														

FIGURE 11

SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA
APRIL 1998
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 10 M/S

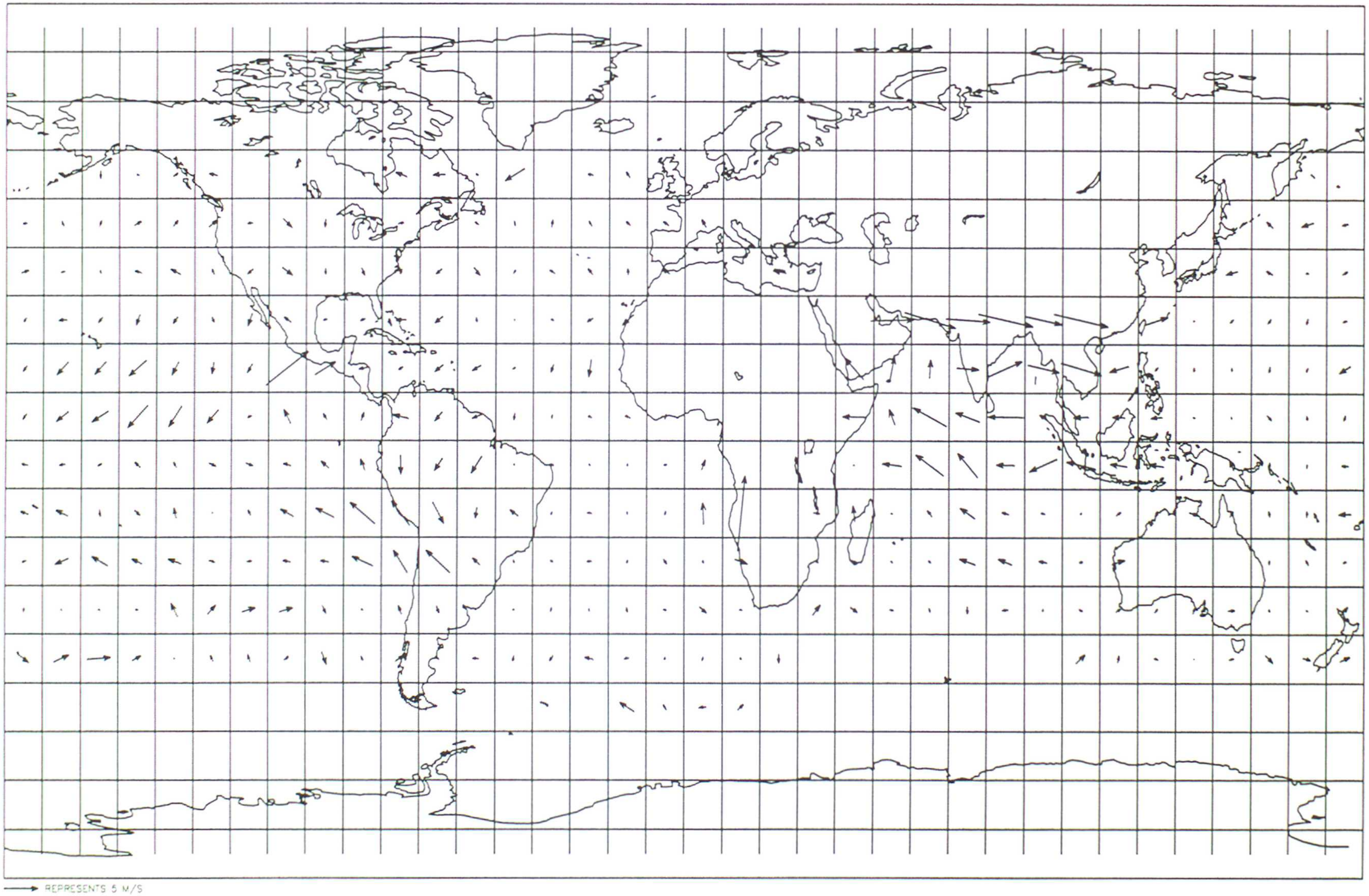
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA

APRIL 1998

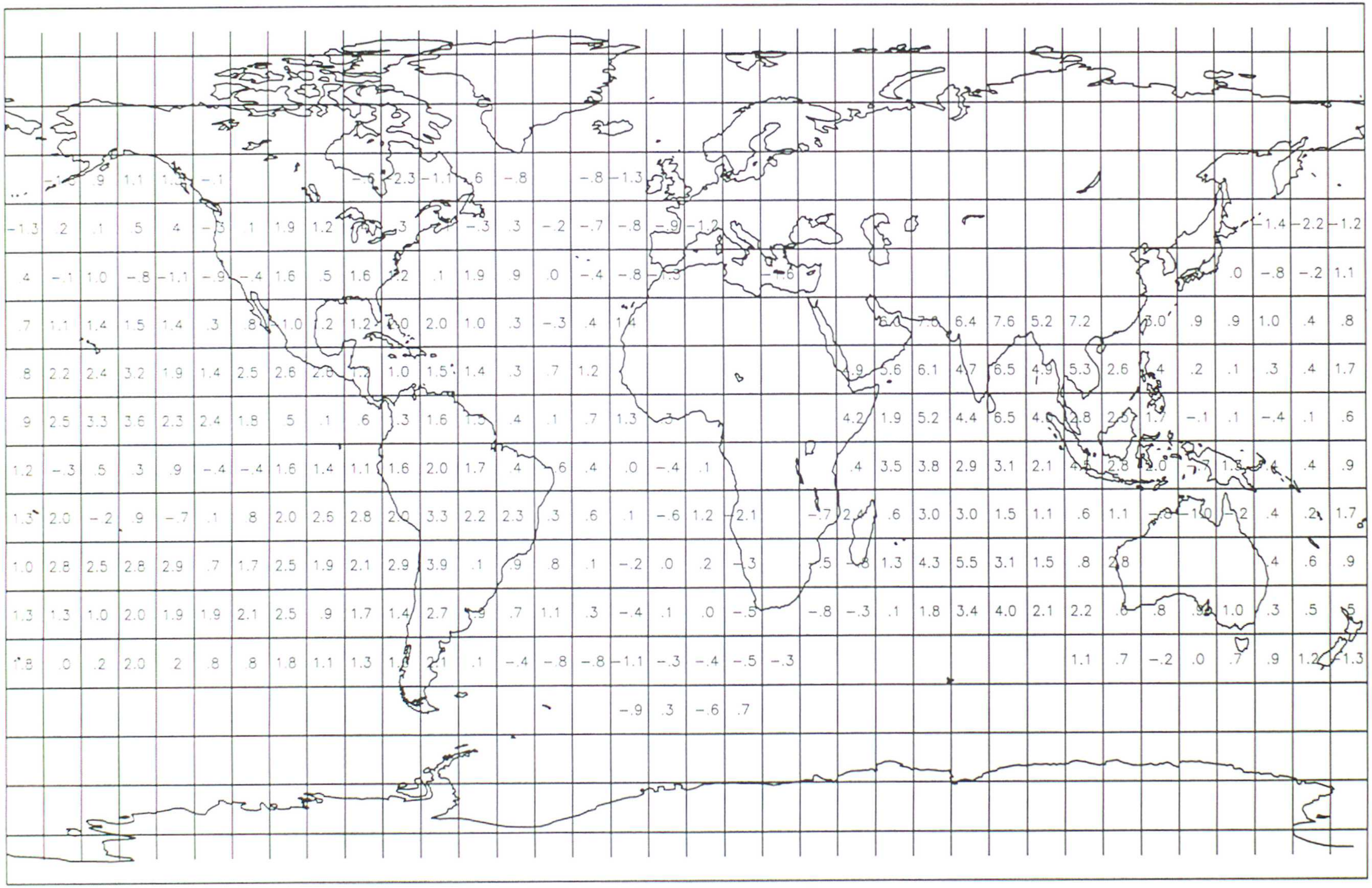
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

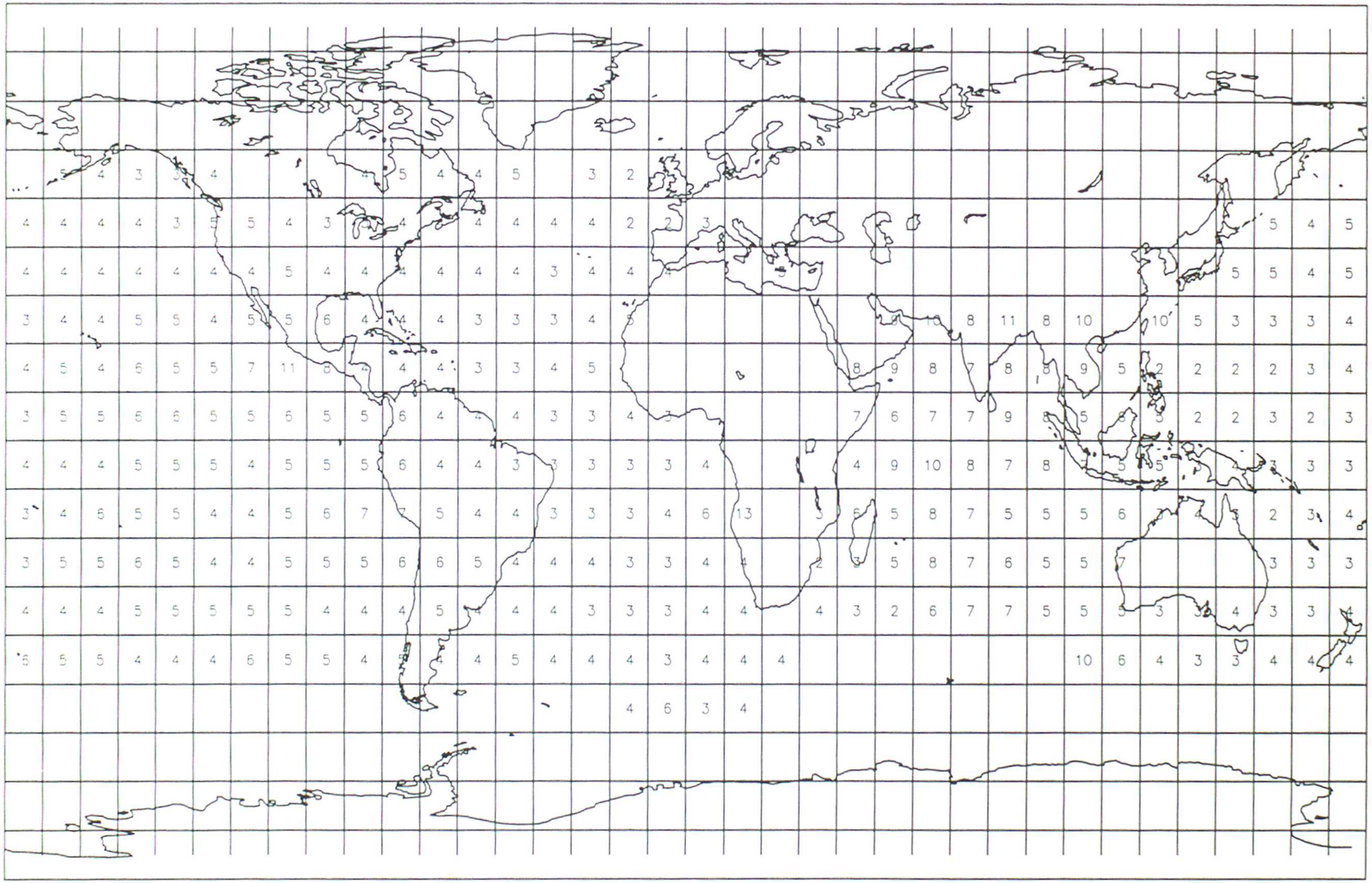
FIGURE 12



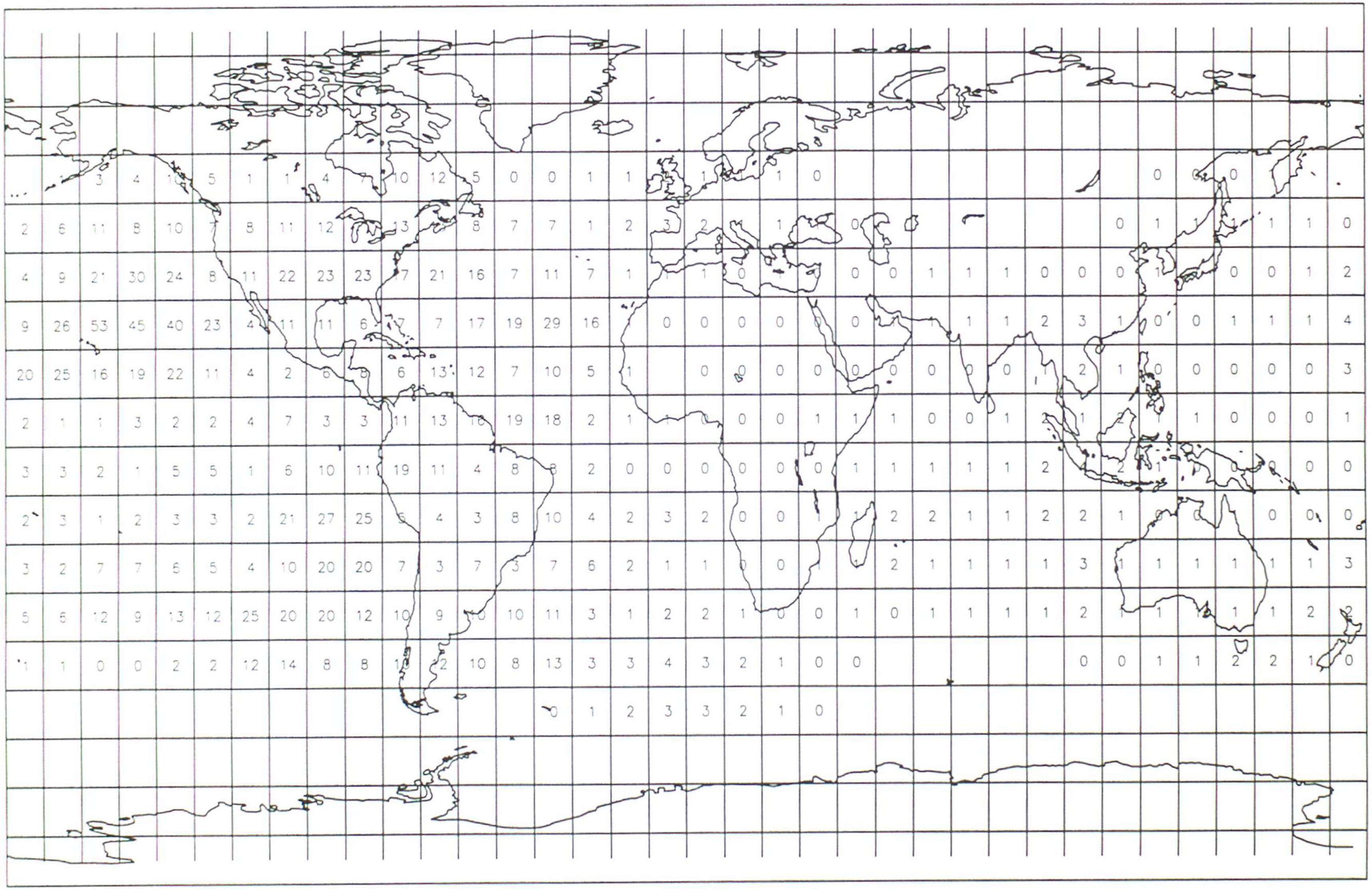
SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
APRIL 1998
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-1.6 .9 1.1 1.2 -.1 -.6 2.3 -1.1 .6 -.8 -.8 -1.3
-1.3 .2 .1 .5 4 -.3 1 1.9 1.2 .3 -.3 .3 -.2 -.7 -.8 -.9 -1.2 -1.4 -2.2 -1.2
.4 -.1 1.0 -.8 -1.1 -.9 -.4 1.6 .5 1.6 .2 .1 1.9 .9 .0 -.4 -.8 -1.3 -1.6 .0 -.8 -.2 1.1
.7 1.1 1.4 1.5 1.4 .3 .8 1.0 1.2 1.2 2.0 2.0 1.0 .3 -.3 .4 1.4 6.0 7.6 6.4 7.6 5.2 7.2 3.0 .9 .9 1.0 .4 .8
.8 2.2 2.4 3.2 1.9 1.4 2.5 2.6 2.8 1.0 1.5 1.4 .3 .7 1.2 4.9 5.6 6.1 4.7 6.5 4.9 5.3 2.6 .4 .2 .1 .3 .4 1.7
.9 2.5 3.3 3.6 2.3 2.4 1.8 .5 .1 .6 .3 1.6 1.5 .4 .1 .7 1.3 -.3 4.2 1.9 5.2 4.4 6.5 4.6 2.8 2.5 1.7 -.1 .1 -.4 .1 .6
1.2 -.3 .5 .3 .9 -.4 -.4 1.6 1.4 1.1 1.6 2.0 1.7 .4 .6 .4 .0 -.4 .1 .4 3.5 3.8 2.9 3.1 2.1 4.4 2.8 2.0 .7 1.3 .4 .4 .9
1.3 2.0 -.2 .9 -.7 .1 .8 2.0 2.5 2.8 2.0 3.3 2.2 2.3 .3 .6 .1 -.6 1.2 -2.1 -.7 2.4 .6 3.0 3.0 1.5 1.1 .6 1.1 -.8 -1.0 -.2 .4 .2 1.7
1.0 2.8 2.5 2.8 2.9 .7 1.7 2.5 1.9 2.1 2.9 3.9 .1 .9 .8 .1 -.2 .0 .2 -.3 .5 -.8 1.3 4.3 5.5 3.1 1.5 .8 2.8 .4 .6 .9
1.3 1.3 1.0 2.0 1.9 1.9 2.1 2.5 .9 1.7 1.4 2.7 .9 .7 1.1 .3 -.4 .1 .0 -.5 -.8 -.3 .1 1.8 3.4 4.0 2.1 2.2 .6 .8 .9 1.0 .3 .5 .5
1.8 .0 .2 2.0 2 .8 .8 1.8 1.1 1.3 1.3 2.1 .1 -.4 -.8 -.8 -1.1 -.3 -.4 -.5 -.3 1.1 .7 -.2 .0 .7 .9 1.2 1.3
-.9 .3 -.6 .7

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
APRIL 1998
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

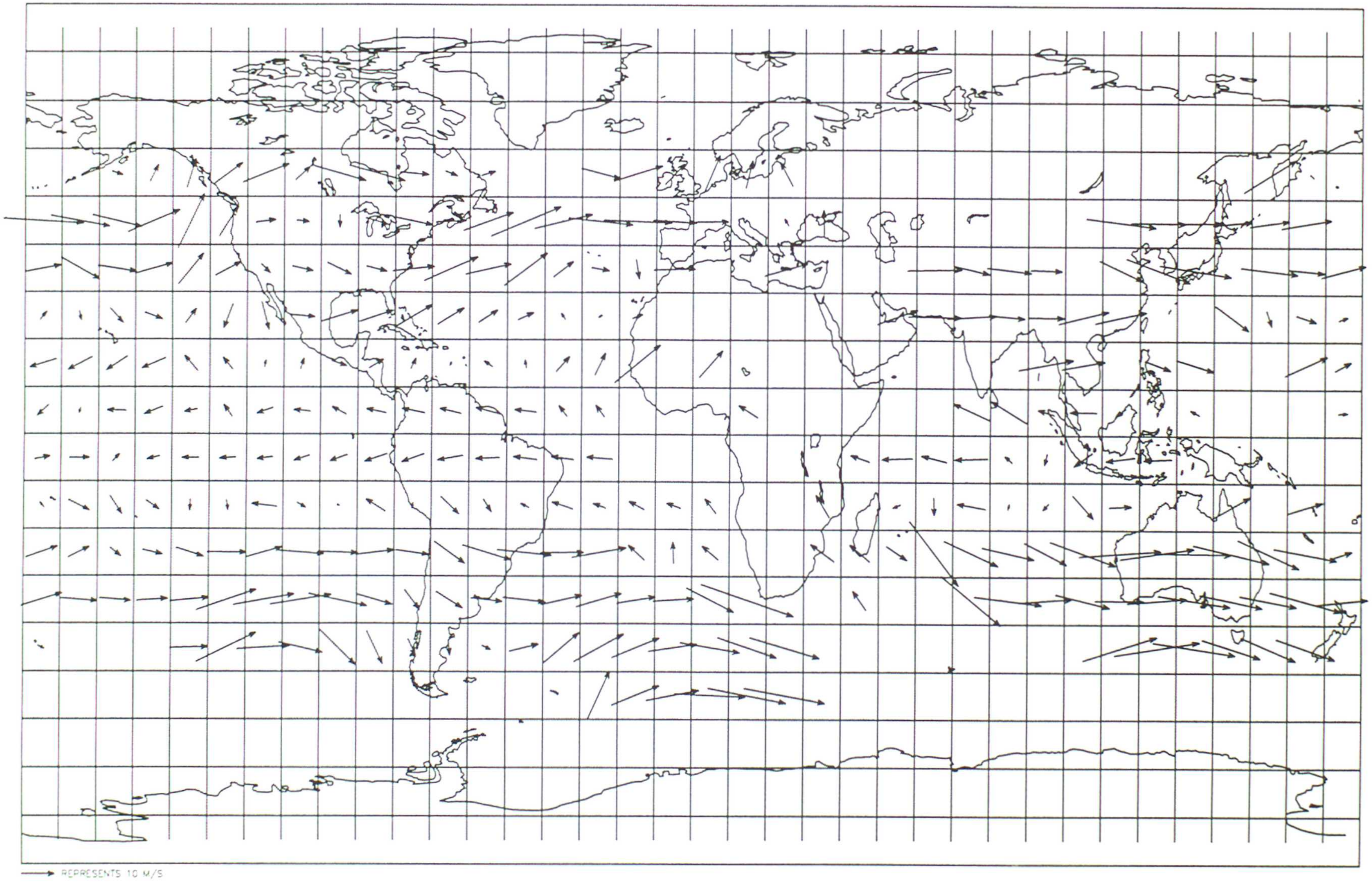

5 4 3 3 4 4 5 4 4 5 3 2
4 4 4 4 3 5 5 4 3 3 4 4 4 4 4 2 2 3 5 4 5
4 4 4 4 4 4 4 5 4 4 4 4 4 4 3 4 4 4 5 5 5 4 5
3 4 4 5 5 4 5 5 6 4 4 4 3 3 3 4 5 8 10 8 11 8 10 10 5 3 3 3 4
4 5 4 6 5 5 7 11 8 4 4 4 3 3 4 5 8 9 8 7 8 8 9 5 2 2 2 2 3 4
3 5 5 6 6 5 5 6 5 5 6 4 4 4 3 3 4 3 7 6 7 7 9 8 5 8 3 2 2 3 2 3
4 4 4 5 5 5 4 5 5 5 6 4 4 3 3 3 3 3 4 4 9 10 8 7 8 7 5 5 3 4 3 3 3
3 4 6 5 5 4 4 5 6 7 7 5 4 4 3 3 3 4 6 13 3 6 5 8 7 5 5 5 6 7 4 3 2 3 4
3 5 5 6 5 4 4 5 5 5 6 6 5 4 4 4 3 3 4 4 2 3 5 8 7 6 5 5 7 3 3 3
4 4 4 5 5 5 5 5 4 4 4 5 4 4 4 3 3 3 4 4 4 3 2 6 7 7 5 5 5 3 3 4 3 3 4
6 5 5 4 4 4 6 5 5 4 5 4 4 5 4 4 4 3 4 4 4 10 6 4 3 3 4 4 4
4 6 3 4

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
APRIL 1998


1 3 4 10 5 1 1 4 7 10 12 5 0 0 1 1 1 1 1 0 0 0 0 1
2 6 11 8 10 7 8 11 12 13 8 7 7 1 2 3 2 1 1 1 0 0 1 1 1 1 1 0
4 9 21 30 24 8 11 22 23 23 7 21 16 7 11 7 1 1 1 0 1 0 0 0 1 1 1 0 0 0 1 0 0 1 2
9 26 53 45 40 23 4 11 11 6 7 7 17 19 29 16 1 0 0 0 0 0 0 1 1 1 1 2 3 1 0 0 1 1 1 4
20 25 16 19 22 11 4 2 6 8 6 13 12 7 10 5 1 0 0 0 0 0 0 0 0 0 1 2 1 0 0 0 0 0 3
2 1 1 3 2 2 4 7 3 3 11 13 16 19 18 2 1 1 0 0 0 1 1 1 0 0 1 2 1 2 1 1 0 0 0 1
3 3 2 1 5 5 1 6 10 11 19 11 4 8 8 2 0 0 0 0 0 0 1 1 1 1 1 2 2 1 0 0 0 0 0
2 3 1 2 3 3 2 21 27 25 5 4 3 8 10 4 2 3 2 0 0 1 1 2 2 1 1 2 2 1 0 0 0 0 0
3 2 7 7 6 5 4 10 20 20 7 3 7 3 7 6 2 1 1 0 0 1 1 2 1 1 1 1 3 1 1 1 1 1 1 3
5 6 12 9 13 12 25 20 20 12 10 9 10 10 11 3 1 2 2 1 0 0 1 0 1 1 1 1 2 1 1 1 1 1 2 2
1 1 0 0 2 2 12 14 8 8 10 12 10 8 13 3 3 4 3 2 1 0 0 0 0 1 1 2 2 1 0
0 1 2 3 3 2 1 0

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
APRIL 1998
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16


REPRESENTS 10 M/S

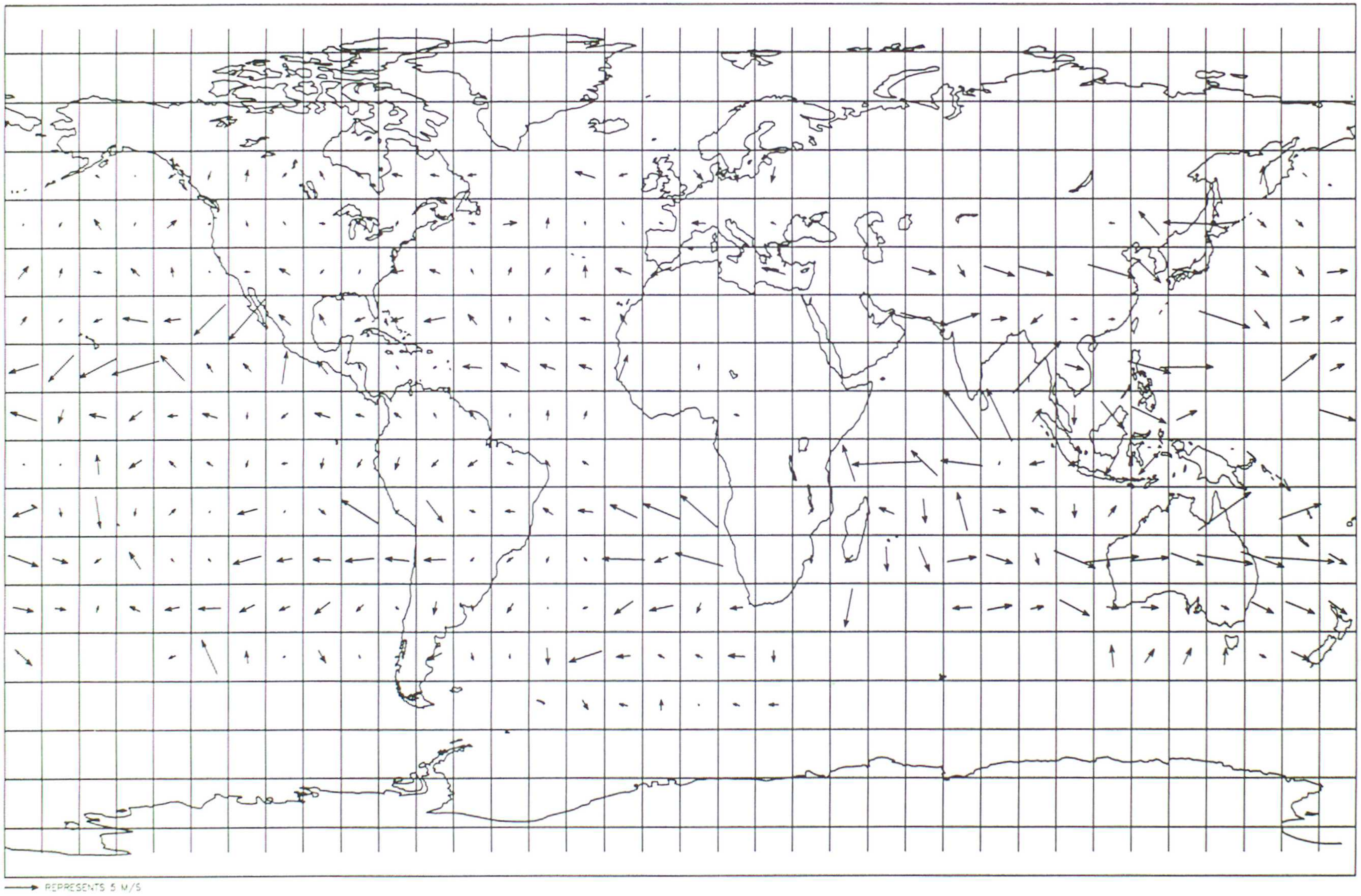
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 401–700 HPA

FIGURE 17

APRIL 1998

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

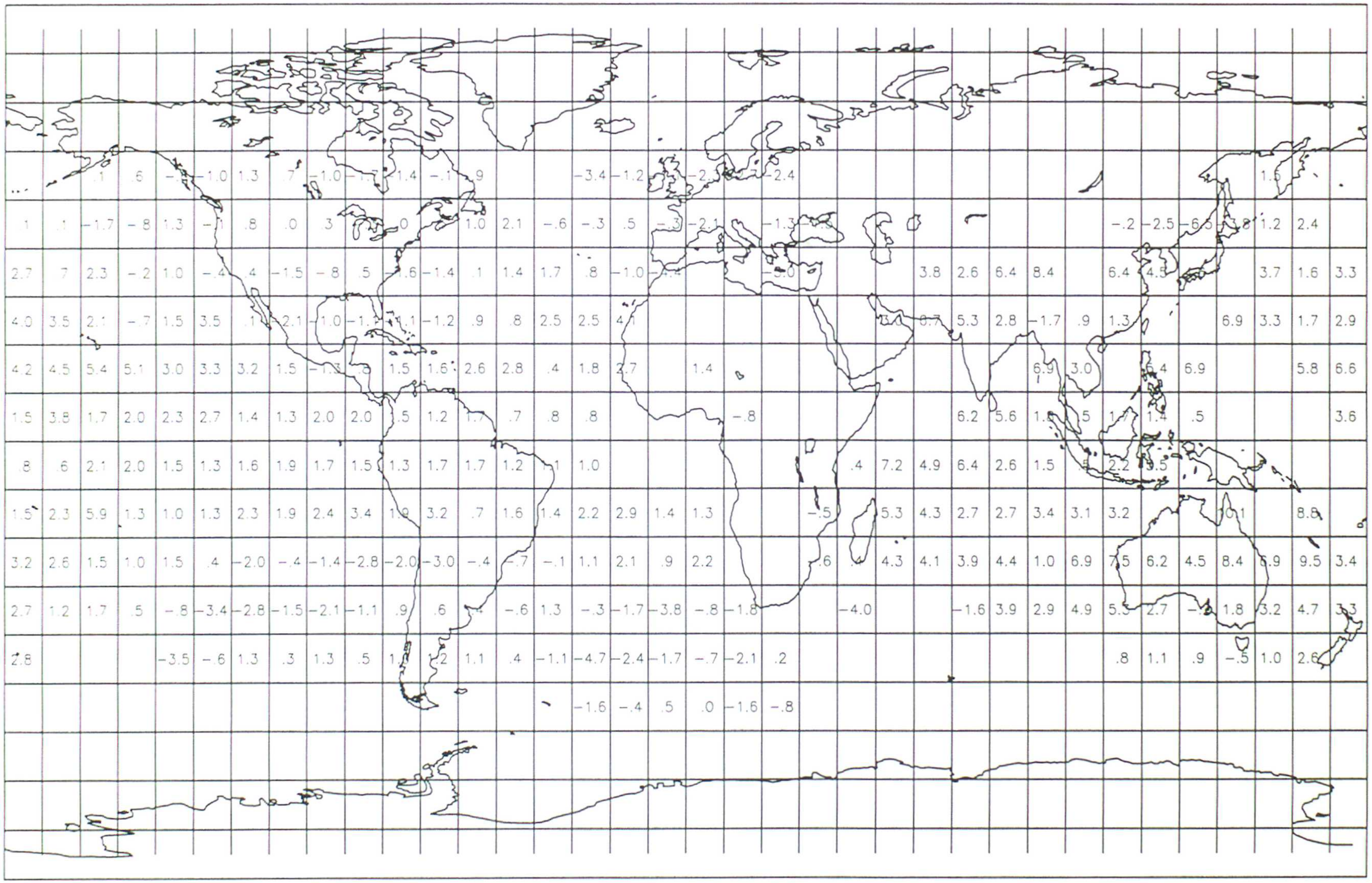

→ REPRESENTS 5 M/S

SATOBS : MEAN O−B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18

APRIL 1998

USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

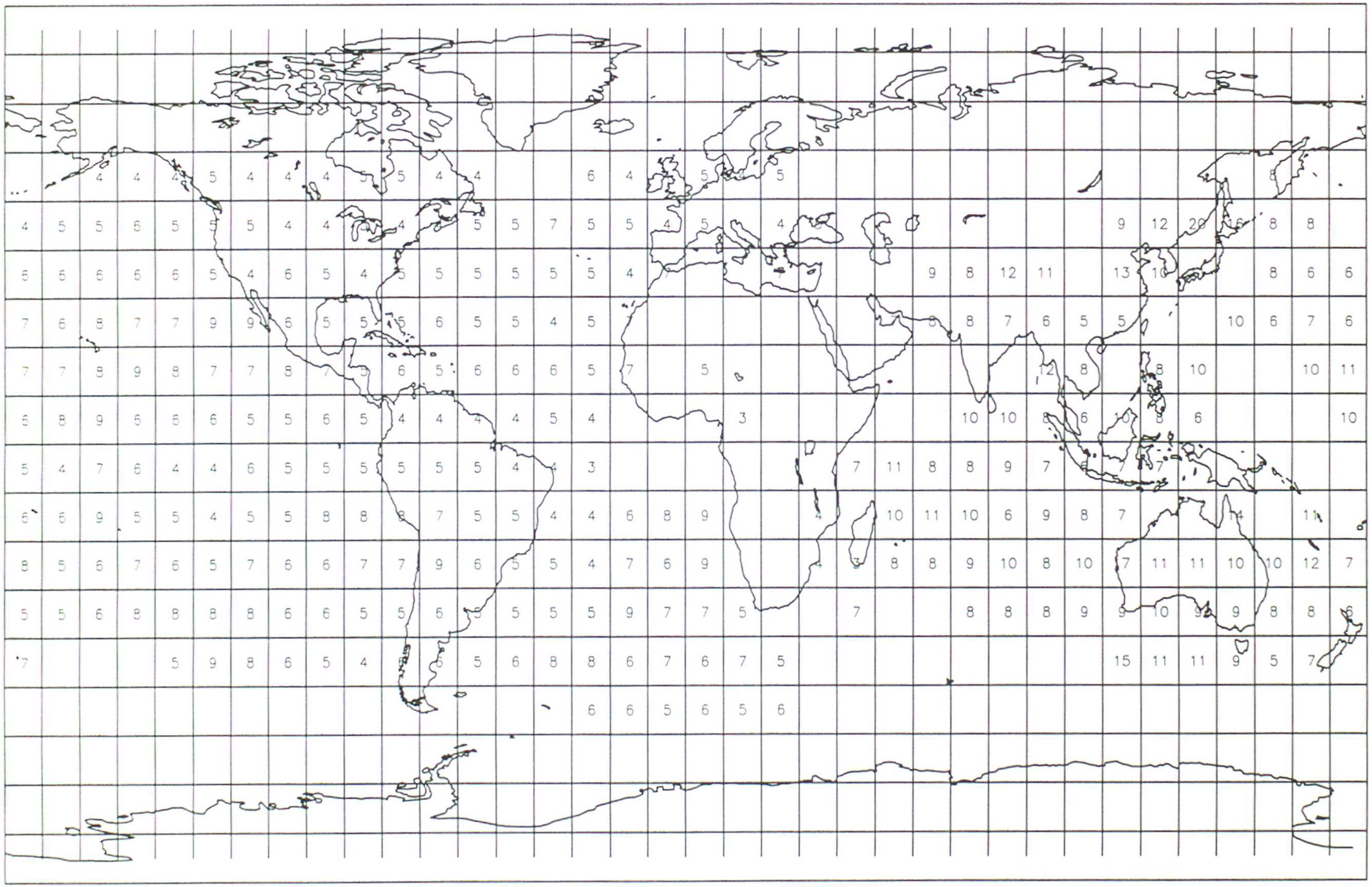

.1 .6 −1.0 1.3 .7 −1.0 1.4 −.1 .9 −3.4 −1.2 −2.4 1.5
1 .1 −1.7 −.8 1.3 −.1 .8 .0 .3 .0 1.0 2.1 −.6 −.3 .5 −.3 −2.1 −1.3 −.2 −2.5 −6.5 −3.8 1.2 2.4
2.7 .7 2.3 −.2 1.0 −.4 .4 −1.5 −.8 .5 −1.6 −1.4 .1 1.4 1.7 .8 −1.0 −4.4 −3.0 3.8 2.6 6.4 8.4 6.4 4.5 3.7 1.6 3.3
4.0 3.5 2.1 −.7 1.5 3.5 .1 −2.1 −1.0 −1.1 −1.2 .9 .8 2.5 2.5 4.1 3.4 8.7 5.3 2.8 −1.7 .9 1.3 6.9 3.3 1.7 2.9
4.2 4.5 5.4 5.1 3.0 3.3 3.2 1.5 −1.3 .8 1.5 1.6 2.6 2.8 .4 1.8 2.7 1.4 6.9 3.0 6.4 6.9 5.8 6.6
1.5 3.8 1.7 2.0 2.3 2.7 1.4 1.3 2.0 2.0 .5 1.2 1.7 .7 .8 .8 −.8 6.2 5.6 1.6 .5 1.7 1.4 .5 3.6
.8 .6 2.1 2.0 1.5 1.3 1.6 1.9 1.7 1.5 1.3 1.7 1.7 1.2 1.1 1.0 .4 7.2 4.9 6.4 2.6 1.5 2.2 3.5
1.5 2.3 5.9 1.3 1.0 1.3 2.3 1.9 2.4 3.4 1.9 3.2 .7 1.6 1.4 2.2 2.9 1.4 1.3 −.5 5.3 4.3 2.7 2.7 3.4 3.1 3.2 10.1 8.8
3.2 2.6 1.5 1.0 1.5 .4 −2.0 −.4 −1.4 −2.8 −2.0 −3.0 −.4 −.7 −.1 1.1 2.1 .9 2.2 .6 4.3 4.1 3.9 4.4 1.0 6.9 7.5 6.2 4.5 8.4 5.9 9.5 3.4
2.7 1.2 1.7 .5 −.8 −3.4 −2.8 −1.5 −2.1 −1.1 .9 .6 −.6 1.3 −.3 −1.7 −3.8 −.8 −1.8 −4.0 −1.6 3.9 2.9 4.9 5.5 2.7 −.8 1.8 3.2 4.7 3.3
2.8 −3.5 −.6 1.3 .3 1.3 .5 1.2 1.1 .4 −1.1 −4.7 −2.4 −1.7 −.7 −2.1 .2 .8 1.1 .9 −.5 1.0 2.6
−1.6 −.4 .5 .0 −1.6 −.8

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19

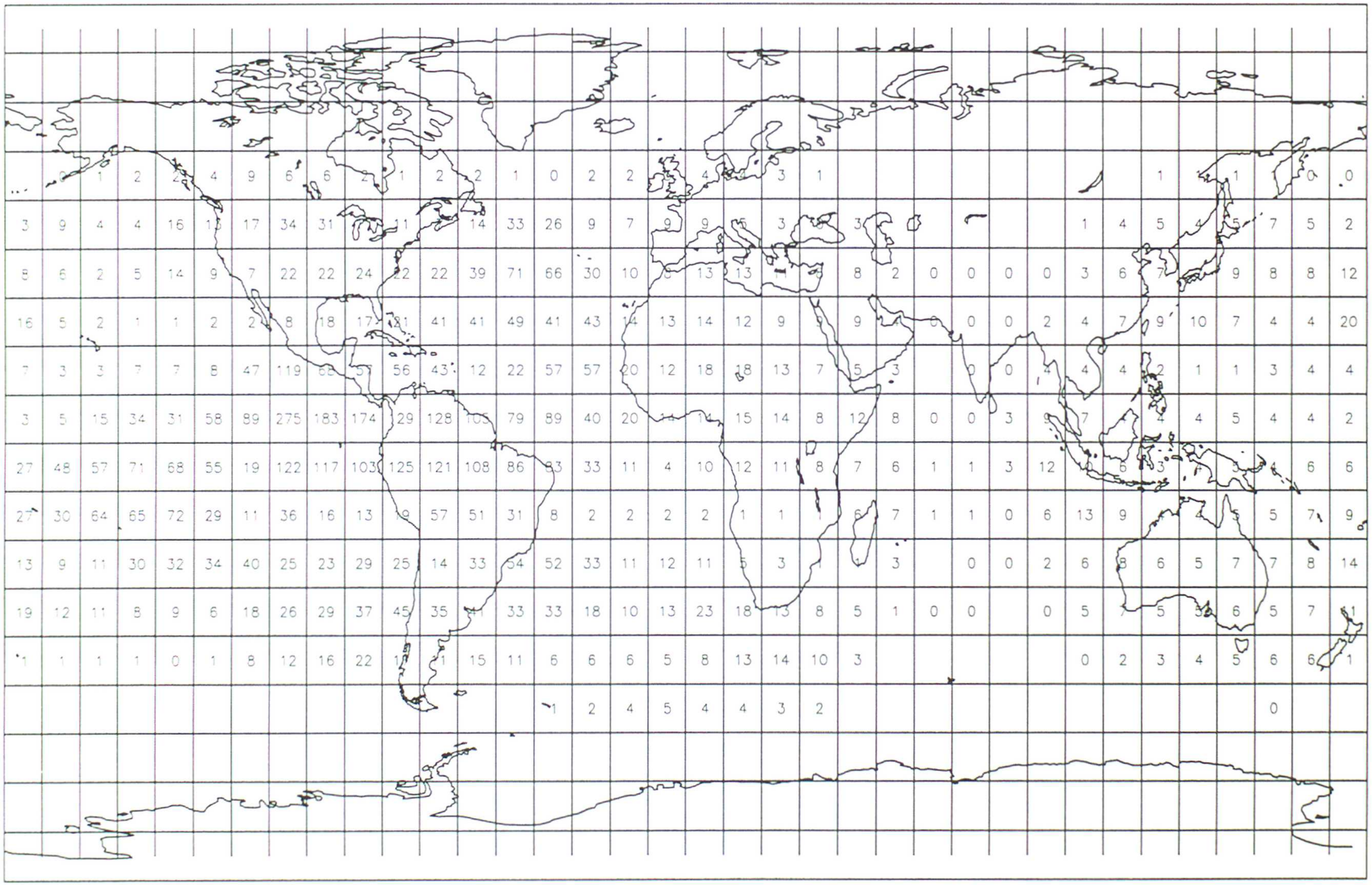
APRIL 1998

USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

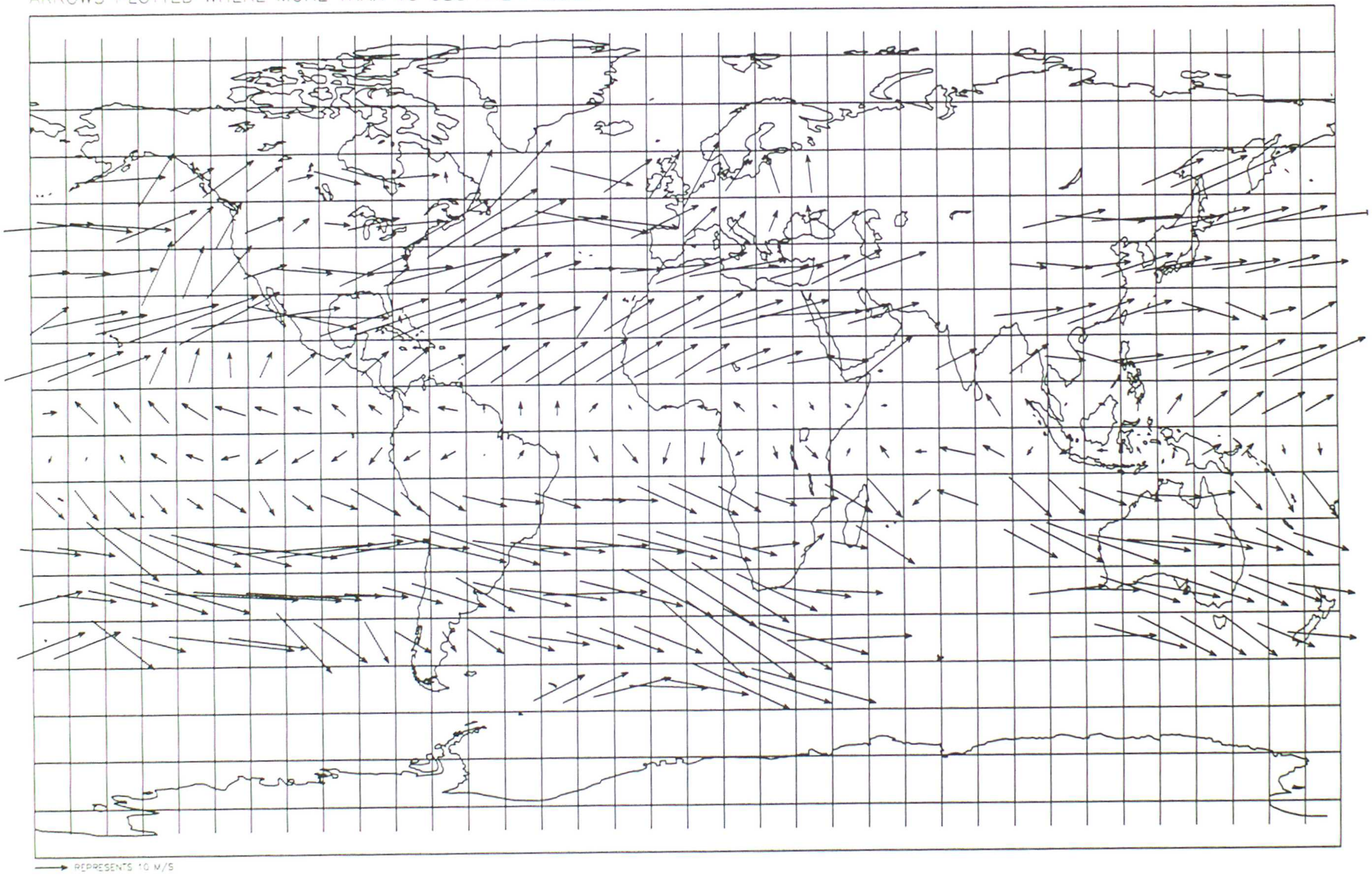

4 4 4 5 4 4 4 5 5 4 4 6 4 5 4 5 8
4 5 5 6 5 5 5 4 4 5 4 5 5 7 5 5 4 5 4 6 9 12 20 16 8 8
6 5 6 6 6 5 4 6 5 4 5 5 5 5 5 5 4 7 7 9 8 12 11 13 10 8 6 6
7 6 8 7 7 9 9 6 5 5 5 6 5 5 4 5 7 7 8 8 7 6 5 5 10 6 7 6
7 7 8 9 8 7 7 8 7 5 6 5 6 6 6 5 7 5 12 8 8 10 10 11
6 8 9 6 6 6 5 5 6 5 4 4 4 4 5 4 3 10 10 8 6 10 8 6 10
5 4 7 6 4 4 6 5 5 5 5 5 5 4 4 3 7 11 8 8 9 7 6 7 7
6 6 9 5 5 4 5 5 8 8 8 7 5 5 4 4 6 8 9 4 10 11 10 6 9 8 7 14 11
8 5 6 7 6 5 7 6 6 7 7 9 6 5 5 4 7 6 9 4 3 8 8 9 10 8 10 7 11 11 10 10 12 7
5 5 6 8 8 8 8 6 6 5 5 6 5 5 5 5 9 7 7 5 7 8 8 8 9 9 10 9 9 8 8 6
7 5 9 8 6 5 4 6 6 5 6 8 8 6 7 6 7 5 15 11 11 9 5 7
6 6 5 6 5 6

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
APRIL 1998


0 1 2 2 4 9 6 6 2 1 2 2 1 0 2 2 4 4 3 1 1 1 1 1 0 0
3 9 4 4 16 15 17 34 31 11 14 33 26 9 7 9 9 5 3 3 1 4 5 4 5 7 5 2
8 6 2 5 14 9 7 22 22 24 22 22 39 71 66 30 10 8 13 13 11 8 8 2 0 0 0 0 3 6 7 9 8 8 12
16 5 2 1 1 2 2 8 18 17 21 41 41 49 41 43 14 13 14 12 9 9 9 4 0 0 0 2 4 7 9 10 7 4 4 20
7 3 3 7 7 8 47 119 68 57 56 43 12 22 57 57 20 12 18 18 13 7 5 3 0 0 4 4 4 2 1 1 3 4 4
3 5 15 34 31 58 89 275 183 174 129 128 105 79 89 40 20 14 14 15 14 8 12 8 0 0 3 9 7 4 4 4 5 4 4 2
27 48 57 71 68 55 19 122 117 103 125 121 108 86 83 33 11 4 10 12 11 8 7 6 1 1 3 12 10 6 3 4 3 4 6 6
27 30 64 65 72 29 11 36 16 13 19 57 51 31 8 2 2 2 2 1 1 1 6 7 1 1 0 6 13 9 4 4 5 5 7 9
13 9 11 30 32 34 40 25 23 29 25 14 33 54 52 33 11 12 11 5 3 1 1 3 0 0 2 6 8 6 5 7 7 8 14
19 12 11 8 9 6 18 26 29 37 45 35 41 33 33 18 10 13 23 18 13 8 5 1 0 0 0 5 7 5 5 6 5 7 11
1 1 1 1 0 1 8 12 16 22 17 11 15 11 6 6 6 5 8 13 14 10 3 0 2 3 4 5 6 6 1
1 2 4 5 4 4 3 2 0

SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA
APRIL 1998
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21


REPRESENTS 10 M/S

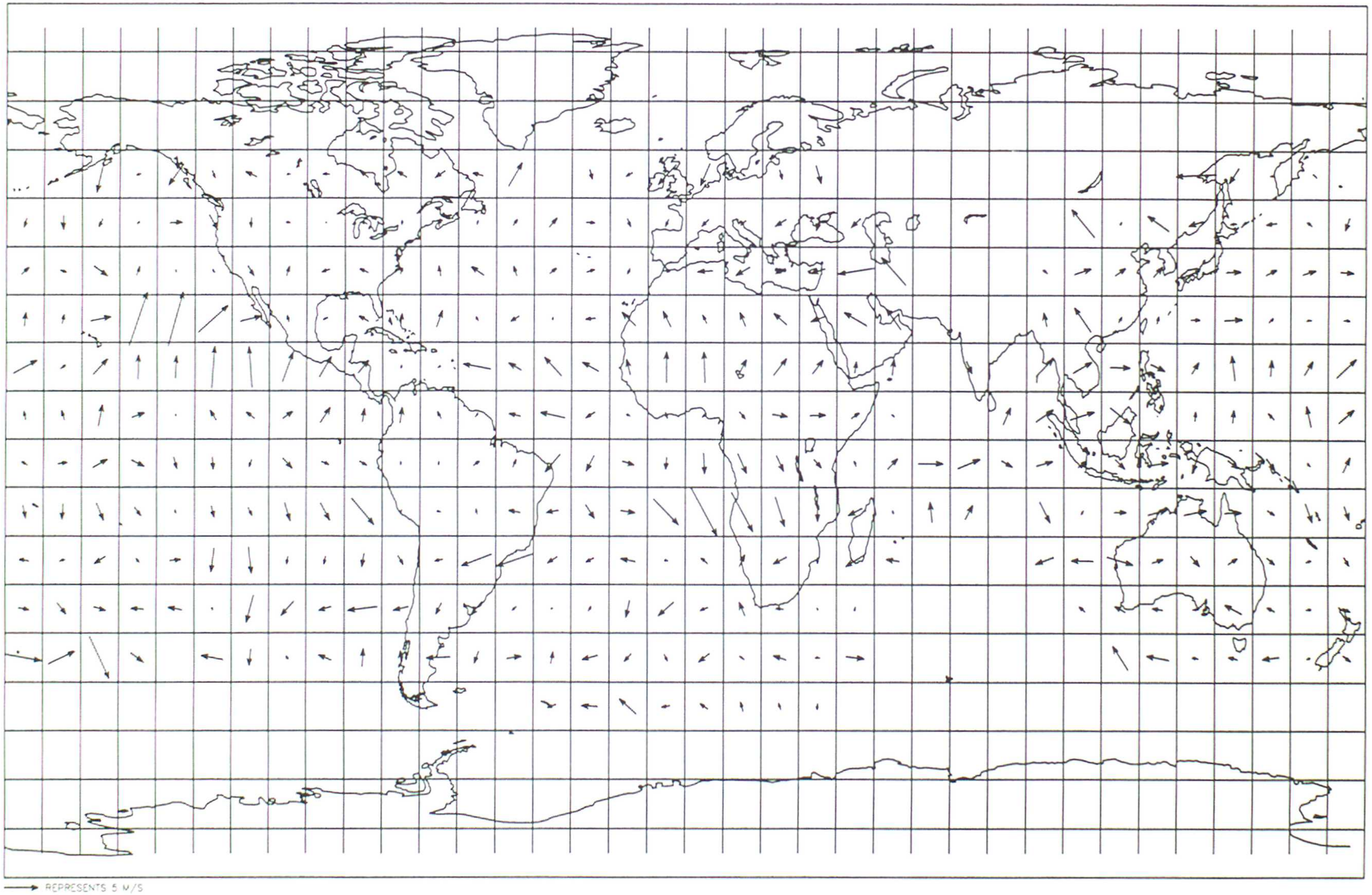
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA

APRIL 1998

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 22

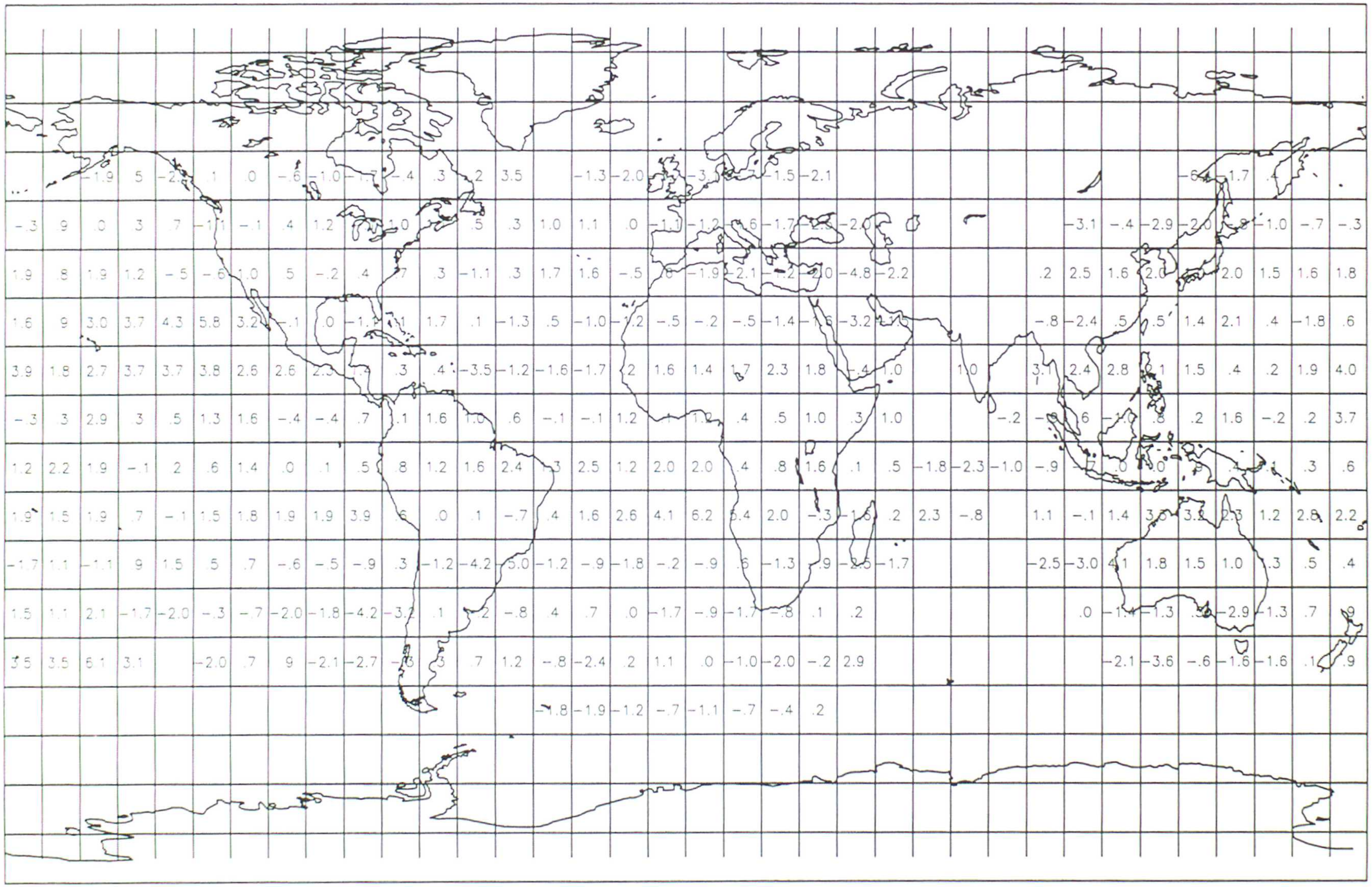

REPRESENTS 5 M/S

SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23

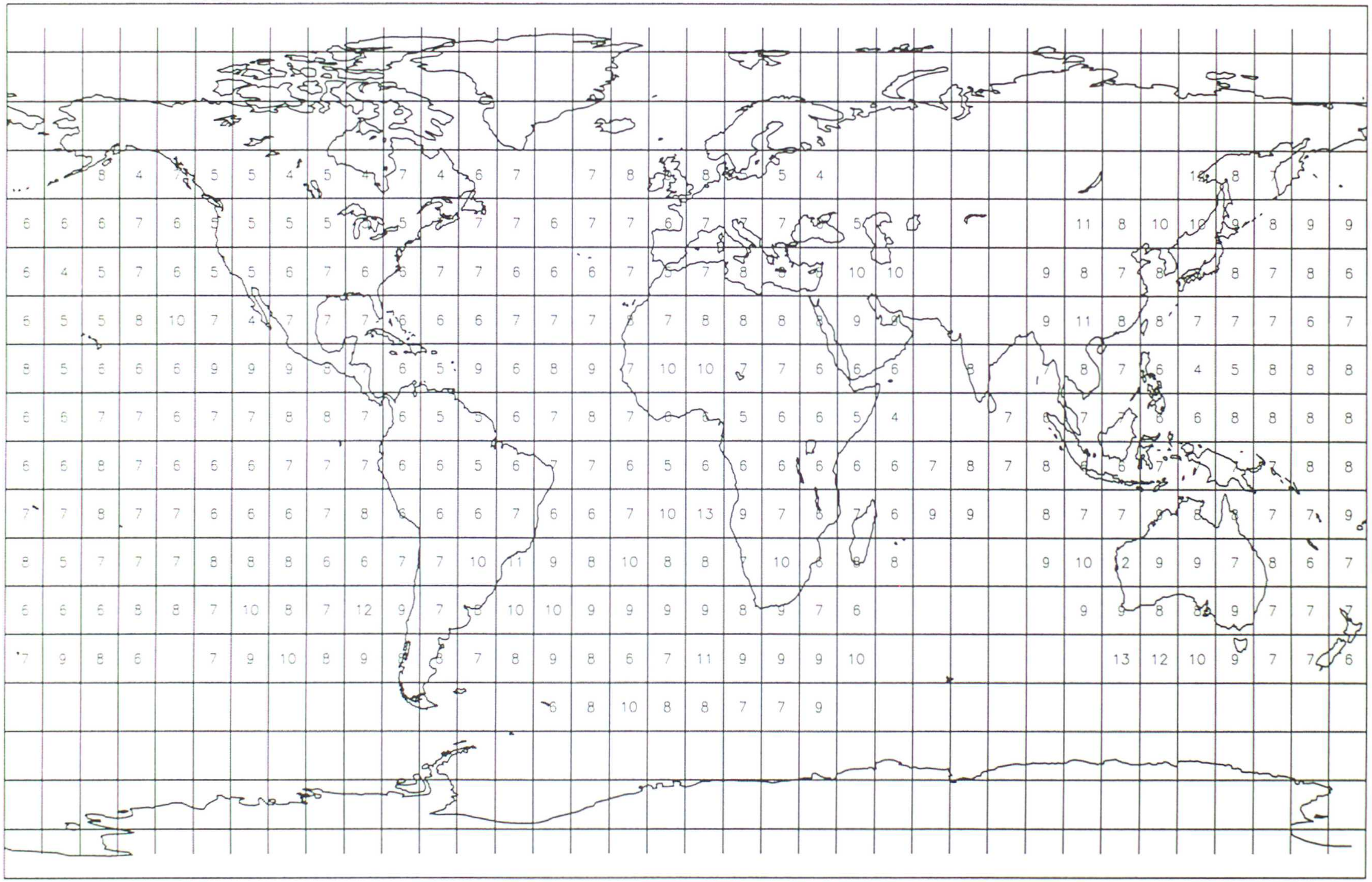
APRIL 1998

USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-1.9 5 -2.4 .1 .0 -.6 -1.0 -1.7 -.4 .3 .2 3.5 -1.3 -2.0 -3. -1.5 -2.1 -6.4 -1.7 .4
-.3 9 .0 3 .7 -1.1 -.1 .4 1.2 1.0 .5 .3 1.0 1.1 .0 -1.1 -1.2 .6 -1.7 -2.3 -2.0 -3.1 -.4 -2.9 -2.0 -1.0 -.7 -.3
1.9 8 1.9 1.2 -.5 -.6 1.0 .5 -.2 .4 .7 .3 -1.1 .3 1.7 1.6 -.5 .6 -1.9 -2.1 -.2 -2.0 -4.8 -2.2 .2 2.5 1.6 2.0 2.0 1.5 1.6 1.8
1.6 9 3.0 3.7 4.3 5.8 3.2 -.1 .0 -1.1 .1 1.7 .1 -1.3 .5 -1.0 -1.2 -.5 -.2 -.5 -1.4 -1.6 -3.2 -.8 -2.4 .5 .5 1.4 2.1 .4 -1.8 .6
3.9 1.8 2.7 3.7 3.7 3.8 2.6 2.6 2.3 1.4 .3 .4 -3.5 -1.2 -1.6 -1.7 .2 1.6 1.4 1.7 2.3 1.8 .4 1.0 1.0 3.1 2.4 2.8 .1 1.5 .4 .2 1.9 4.0
-.3 3 2.9 .3 .5 1.3 1.6 -.4 -.4 .7 .1 1.6 1.0 .6 -.1 -.1 1.2 .1 1.2 .4 .5 1.0 .3 1.0 -.2 -.8 .6 -1.0 .8 .2 1.6 -.2 .2 3.7
1.2 2.2 1.9 -.1 2 .6 1.4 .0 .1 .5 .8 1.2 1.6 2.4 1.3 2.5 1.2 2.0 2.0 .4 .8 1.6 .1 .5 -1.8 -2.3 -1.0 -.9 .7 .0 1.0 .1 .3 .6
1.9 1.5 1.9 .7 -.1 1.5 1.8 1.9 1.9 3.9 .6 .0 .1 -.7 .4 1.6 2.6 4.1 6.2 5.4 2.0 -.3 -1.5 .2 2.3 -.8 1.1 -.1 1.4 3.6 3.2 2.3 1.2 2.8 2.2
-1.7 1.1 -1.1 9 1.5 .5 .7 -.6 -.5 -.9 .3 -1.2 -4.2 -5.0 -1.2 -.9 -1.8 -.2 -.9 .6 -1.3 .9 -2.5 -1.7 -2.5 -3.0 4.1 1.8 1.5 1.0 1.3 .5 .4
1.5 1.1 2.1 -1.7 -2.0 -.3 -.7 -2.0 -1.8 -4.2 -3.2 .1 .2 -.8 4 .7 .0 -1.7 -.9 -1.7 -.8 .1 .2 .0 -1.4 -1.3 .3 -2.9 -1.3 .7 .9
3.5 3.5 6.1 3.1 -2.0 .7 9 -2.1 -2.7 -.6 .3 .7 1.2 -.8 -2.4 .2 1.1 .0 -1.0 -2.0 -.2 2.9 -2.1 -3.6 -.6 -1.6 -1.6 .1 .9
-1.8 -1.9 -1.2 -.7 -1.1 -.7 -.4 .2

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
APRIL 1998
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


8 4 5 5 4 5 7 4 6 7 7 8 8 5 4 8
6 6 6 7 6 5 5 5 5 7 7 6 7 7 6 7 7 5 11 8 10 8 9 9
6 4 5 7 6 5 5 6 7 6 7 7 6 6 6 7 7 8 10 10 9 8 7 8 7 8 6
6 5 5 8 10 7 4 7 7 7 6 6 6 7 7 7 7 8 8 8 9 9 11 8 8 7 7 7 6 7
8 5 6 6 6 9 9 9 6 5 9 6 8 9 7 10 10 7 7 6 6 6 8 8 7 6 4 5 8 8 8
6 6 7 7 6 7 7 8 8 7 6 5 5 6 7 8 7 5 6 6 5 4 7 7 6 8 8 8 8
6 6 8 7 6 6 6 7 7 7 6 6 5 6 7 6 5 6 6 6 6 6 6 7 8 7 8 6 7 8 8
7 7 8 7 7 6 6 6 7 8 6 6 6 7 6 6 7 10 13 9 7 7 6 9 9 8 7 7 8 7 7 9
8 5 7 7 7 8 8 8 6 6 7 7 10 11 9 8 10 8 8 10 8 8 9 10 2 9 9 7 8 6 7
6 6 6 8 8 7 10 8 7 12 9 7 10 10 9 9 9 9 8 7 6 9 9 8 9 7 7 7
7 9 8 6 7 9 10 8 9 7 8 9 8 6 7 11 9 9 9 10 13 12 10 9 7 7 6
6 8 10 8 8 7 7 9

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: April, 1998

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from NOAA-11, NOAA-14 500 km.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:All SATEM soundings where number of observations > 30.
Data Extracted	:Layer: 850 - 1000 hPa 100 - 300 hPa 30 - 50 hPa
	:Mean observation minus background temperature differences

NO DATA AVAILABLE

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 m s^{-1} (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
09804	45.5	-8.1	ALL	P	SUR	3	0	0	0.6	1.1	1.3
13502	15.2	-35.5	ALL	P	SUR	52	0	0	1.0	0.8	1.3
13503	19.9	-34.9	ALL	P	SUR	68	0	0	0.9	-0.3	0.9
13903	24.2	-46.7	ALL	P	SUR	223	0	0	1.0	1.2	1.6
13906	28.1	-55.6	ALL	P	SUR	246	0	0	1.3	0.2	1.4
13912	17.9	-66.4	ALL	P	SUR	120	0	0	1.4	-0.2	1.4
13913	18.8	-53.8	ALL	P	SUR	225	0	0	1.0	-0.1	1.0
20704	49.4	-30.1	ALL	P	SUR	1	0	0	0.0	0.5	0.5
20905UCP	45.7	-41.9	ALL	P	SUR	1	0	0	0.0	-2.0	2.0
20907	45.5	-35.6	ALL	P	SUR	1	0	0	0.0	-0.1	0.1
29804	35.9	-19.2	ALL	P	SUR	11	0	0	1.9	0.6	2.0
40702	36.8	-68.1	ALL	P	SUR	1	0	0	0.0	-0.7	0.7
41501	20.2	-44.7	ALL	P	SUR	41	0	0	3.1	3.1	4.4
41502	19.9	-40.3	ALL	P	SUR	59	0	0	1.1	0.2	1.1
41505	10.0	-40.0	ALL	P	SUR	2	0	0	2.1	0.8	2.3
41506	16.0	-61.7	ALL	P	SUR	247	0	0	1.0	0.8	1.3
41520	15.1	-40.0	ALL	P	SUR	50	0	0	1.1	0.9	1.4
41524	17.5	-61.8	ALL	P	SUR	378	0	0	2.6	-0.3	2.6
41525	10.0	-50.6	ALL	P	SUR	47	1	2	1.0	0.3	1.0
41596	28.9	-40.0	ALL	P	SUR	16	0	0	0.8	-0.1	0.8
41597	33.1	-29.8	ALL	P	SUR	579	0	0	0.8	0.3	0.8
41924	24.0	-46.3	ALL	P	SUR	222	0	0	0.9	-2.2	2.4
44601	52.3	-44.4	ALL	P	SUR	239	17	7	1.5	0.3	1.5
44602	53.0	-41.2	ALL	P	SUR	237	13	5	1.4	0.2	1.4
44603	50.6	-47.2	ALL	P	SUR	198	0	0	1.5	-0.2	1.5
44604	47.3	-48.1	ALL	P	SUR	143	0	0	1.7	0.0	1.7
44606	54.6	-51.4	ALL	P	SUR	280	0	0	1.4	0.2	1.4
44609	58.9	-21.6	ALL	P	SUR	1063	1	0	1.4	0.8	1.6
44613	38.6	-38.8	ALL	P	SUR	95	0	0	0.9	0.0	0.9
44614	56.6	-35.6	ALL	P	SUR	1180	5	0	1.4	0.2	1.4
44616	51.8	-27.4	ALL	P	SUR	857	4	0	1.2	0.2	1.3
44617	52.4	-23.4	ALL	P	SUR	912	4	0	1.3	0.2	1.3
44621	58.1	-9.5	ALL	P	SUR	798	1	0	1.2	-0.3	1.2
44624	60.5	-10.3	ALL	P	SUR	745	10	1	0.9	0.1	0.9
44727	58.3	-25.3	ALL	P	SUR	1834	4	0	1.0	0.1	1.0
44742	41.2	-42.9	ALL	P	SUR	106	0	0	1.1	-0.5	1.2
44743	45.1	-49.9	ALL	P	SUR	94	0	0	2.5	1.1	2.7
44761	55.9	-38.7	ALL	P	SUR	849	0	0	1.5	0.3	1.5
44762	39.4	-9.4	ALL	P	SUR	215	0	0	1.1	-3.0	3.2
44763	50.5	-38.7	ALL	P	SUR	244	6	2	1.8	0.4	1.9
44765	58.8	-47.3	ALL	P	SUR	697	5	1	1.6	0.2	1.6
44766	51.2	-28.8	ALL	P	SUR	796	10	1	1.7	0.2	1.7
44768	60.9	-16.0	ALL	P	SUR	1297	4	0	1.1	0.3	1.2
44771	54.4	-18.9	ALL	P	SUR	997	3	0	1.3	0.1	1.3
44773	58.9	-19.2	ALL	P	SUR	1237	3	0	1.0	0.1	1.0
44774	50.7	-50.1	ALL	P	SUR	122	1	1	2.0	-2.0	2.8
44775	61.5	-25.8	ALL	P	SUR	1331	2	0	1.0	0.5	1.1
44778	57.9	-50.5	ALL	P	SUR	158	0	0	1.6	-0.7	1.7
44779	44.0	-54.7	ALL	P	SUR	111	0	0	1.4	-0.3	1.5
44780	57.5	-23.8	ALL	P	SUR	1217	3	0	1.0	0.2	1.0
44901	54.9	-47.7	ALL	P	SUR	109	0	0	1.5	1.1	1.9
44912	51.9	-22.3	ALL	P	SUR	77	0	0	1.2	1.1	1.7
44925	58.4	-54.3	ALL	P	SUR	130	1	1	2.2	0.6	2.2
48518	80.0	-9.1	ALL	P	SUR	711	0	0	1.1	-0.5	1.2
49804	26.3	-50.1	ALL	P	SUR	10	0	0	2.1	1.4	2.5
51633	35.5	-65.2	ALL	P	SUR	402	0	0	1.1	0.0	1.1
51634	23.9	-80.5	ALL	P	SUR	131	0	0	0.9	-0.1	0.9
61535	35.7	-5.3	ALL	P	SUR	80	0	0	0.9	-2.2	2.4
61556	25.8	-83.1	ALL	P	SUR	207	0	0	0.9	0.4	1.0
61557	33.4	-74.4	ALL	P	SUR	86	0	0	1.2	0.2	1.3

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
62501	45.9	-12.9	ALL	P	SUR	145	2	1	5.4	2.9	6.1
62506	49.3	-14.6	ALL	P	SUR	320	0	0	2.5	-0.7	2.6
62551	47.9	-14.5	ALL	P	SUR	442	1	0	1.7	1.1	2.0
62553	54.0	-18.8	ALL	P	SUR	625	5	1	1.1	0.3	1.2
62557	48.3	-8.7	ALL	P	SUR	954	3	0	1.5	0.6	1.7
62558	55.8	-8.1	ALL	P	SUR	1116	4	0	1.1	0.5	1.1
62673	61.6	-19.5	ALL	P	SUR	423	0	0	1.0	-0.2	1.0
62674	59.0	-23.3	ALL	P	SUR	410	0	0	0.9	-0.1	0.9
62697	51.8	-9.9	ALL	P	SUR	251	1	0	1.4	0.2	1.4
62751	48.3	-18.3	ALL	P	SUR	157	0	0	1.8	0.0	1.8
62755	43.8	-10.1	ALL	P	SUR	110	0	0	1.3	0.4	1.4
62758	45.1	-21.0	ALL	P	SUR	138	0	0	1.4	0.0	1.4
64528	60.4	-21.0	ALL	P	SUR	1077	4	0	0.9	-0.2	1.0
64530	62.2	-53.5	ALL	P	SUR	1237	1	0	1.4	0.3	1.4
64552	63.8	-33.4	ALL	P	SUR	1016	3	0	1.5	0.5	1.6
64561	53.5	-16.3	ALL	P	SUR	865	9	1	1.2	0.2	1.2
64563	58.7	-36.4	ALL	P	SUR	1691	6	0	1.3	-0.4	1.3
65562	61.2	-16.3	ALL	P	SUR	1732	1	0	1.0	-0.3	1.1
65591	62.3	-25.5	ALL	P	SUR	829	8	1	1.1	0.1	1.1
65592	62.5	-25.6	ALL	P	SUR	1347	4	0	1.2	-0.3	1.2
65594	63.1	-29.8	ALL	P	SUR	1962	7	0	1.0	0.2	1.0
65597	55.2	-22.7	ALL	P	SUR	1287	8	1	1.2	-0.4	1.2
70825	44.0	-82.5	ALL	P	SUR	1	0	0	0.0	-0.6	0.6
73509	43.6	-69.9	ALL	P	SUR	158	158	100	0.0	0.0	0.0
74532	43.5	-67.6	ALL	P	SUR	175	154	88	2.1	-12.2	12.4
WIND SPEED											
09804	45.5	-8.1	ALL	SPEED	SUR	3	0	0	0.5	4.5	4.5
13502	15.2	-35.5	ALL	SPEED	SUR	62	0	0	1.9	1.1	2.2
13503	19.9	-34.9	ALL	SPEED	SUR	79	0	0	1.5	-1.0	1.8
20704	49.4	-30.1	ALL	SPEED	SUR	2	0	0	0.0	4.3	4.3
20905UCP	45.7	-41.9	ALL	SPEED	SUR	1	0	0	0.0	1.1	1.1
20907	45.5	-35.6	ALL	SPEED	SUR	1	0	0	0.0	8.1	8.1
24624	61.2	-9.8	ALL	SPEED	SUR	2	0	0	0.0	-8.6	8.6
29804	35.9	-19.2	ALL	SPEED	SUR	12	0	0	6.2	2.3	6.6
40702	36.8	-68.1	ALL	SPEED	SUR	2	0	0	0.0	-3.6	3.6
41501	20.2	-44.7	ALL	SPEED	SUR	33	0	0	9.1	2.4	9.4
41502	19.9	-40.3	ALL	SPEED	SUR	67	0	0	1.7	-1.8	2.5
41505	10.0	-40.0	ALL	SPEED	SUR	2	0	0	1.3	1.8	2.2
41506	16.0	-61.7	ALL	SPEED	SUR	145	0	0	6.7	-2.4	7.1
41520	15.1	-40.0	ALL	SPEED	SUR	53	0	0	2.1	0.7	2.2
41523	14.0	-56.6	ALL	SPEED	SUR	224	0	0	1.6	0.3	1.7
41524	17.5	-61.8	ALL	SPEED	SUR	297	0	0	3.6	0.5	3.6
41596	28.9	-40.0	ALL	SPEED	SUR	9	0	0	0.7	-1.6	1.7
44601	52.3	-44.4	ALL	SPEED	SUR	163	0	0	2.9	1.7	3.4
44602	53.0	-41.2	ALL	SPEED	SUR	152	0	0	2.5	0.5	2.5
44609	58.9	-21.6	ALL	SPEED	SUR	1187	0	0	3.9	0.3	3.9
44621	58.1	-9.5	ALL	SPEED	SUR	497	1	0	2.8	-1.9	3.4
44624	60.5	-10.3	ALL	SPEED	SUR	591	4	1	3.5	-6.3	7.2
44727	58.3	-25.3	ALL	SPEED	SUR	1	0	0	0.0	-1.5	1.5
44773	58.9	-19.2	ALL	SPEED	SUR	1646	2	0	2.0	-2.5	3.3
49804	26.3	-50.1	ALL	SPEED	SUR	15	0	0	3.0	2.9	4.2
62506	49.3	-14.6	ALL	SPEED	SUR	157	0	0	1.6	-0.4	1.7
62551	47.9	-14.5	ALL	SPEED	SUR	263	0	0	2.3	0.3	2.3
62553	54.0	-18.8	ALL	SPEED	SUR	771	0	0	1.6	-0.9	1.9
62557	48.3	-8.7	ALL	SPEED	SUR	2	0	0	0.0	1.3	1.3
62558	55.8	-8.1	ALL	SPEED	SUR	1	1	100	0.0	0.0	0.0
62567	44.2	-12.2	ALL	SPEED	SUR	378	0	0	1.7	-0.2	1.7
62673	61.6	-19.5	ALL	SPEED	SUR	554	0	0	2.1	0.1	2.1
62674	59.0	-23.3	ALL	SPEED	SUR	617	0	0	1.8	-1.5	2.3
62751	48.3	-18.3	ALL	SPEED	SUR	466	0	0	1.7	0.4	1.7
62753	44.6	-17.8	ALL	SPEED	SUR	415	0	0	1.4	0.1	1.4

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND SPEED											
62754	50.1	-14.8	ALL	SPEED	SUR	413	0	0	1.8	0.4	1.8
62755	43.8	-10.1	ALL	SPEED	SUR	319	0	0	1.6	-0.3	1.6
62756	44.7	-3.3	ALL	SPEED	SUR	352	0	0	2.0	0.0	2.0
62758	45.1	-21.0	ALL	SPEED	SUR	460	0	0	1.6	0.1	1.6
62759	42.6	-15.6	ALL	SPEED	SUR	431	0	0	1.6	0.3	1.7
62760	48.0	-13.7	ALL	SPEED	SUR	440	0	0	1.6	-0.3	1.6
64563	58.7	-36.4	ALL	SPEED	SUR	1	0	0	0.0	-10.2	10.2
65592	62.5	-25.6	ALL	SPEED	SUR	2	0	0	0.0	1.3	1.3
WIND DIRECTION											
09804	45.5	-8.1	ALL	DIRN.	SUR	3	0	0	0.7	-3.4	3.4
13502	15.2	-35.5	ALL	DIRN.	SUR	36	0	0	23.3	33.8	41.1
13503	19.9	-34.9	ALL	DIRN.	SUR	48	0	0	17.4	10.1	20.1
20905UCP	45.7	-41.9	ALL	DIRN.	SUR	1	0	0	0.0	7.0	7.0
20907	45.5	-35.6	ALL	DIRN.	SUR	1	0	0	0.0	-8.6	8.6
29804	35.9	-19.2	ALL	DIRN.	SUR	8	0	0	17.7	-6.2	18.8
41501	20.2	-44.7	ALL	DIRN.	SUR	21	0	0	68.9	13.4	70.2
41502	19.9	-40.3	ALL	DIRN.	SUR	33	0	0	27.7	-15.5	31.8
41505	10.0	-40.0	ALL	DIRN.	SUR	1	0	0	0.0	-72.7	72.7
41520	15.1	-40.0	ALL	DIRN.	SUR	40	0	0	12.6	28.7	31.4
41523	14.0	-56.6	ALL	DIRN.	SUR	169	0	0	15.3	-0.8	15.3
41524	17.5	-61.8	ALL	DIRN.	SUR	81	0	0	22.9	-12.3	25.9
41525	10.0	-50.6	ALL	DIRN.	SUR	46	0	0	32.9	-4.7	33.3
41596	28.9	-40.0	ALL	DIRN.	SUR	8	0	0	10.4	-8.8	13.6
44601	52.3	-44.4	ALL	DIRN.	SUR	119	0	0	23.8	-16.9	29.2
44602	53.0	-41.2	ALL	DIRN.	SUR	114	0	0	32.4	13.1	34.9
44609	58.9	-21.6	ALL	DIRN.	SUR	473	0	0	22.1	-2.2	22.3
44621	58.1	-9.5	ALL	DIRN.	SUR	720	1	0	19.8	-10.2	22.3
44624	60.5	-10.3	ALL	DIRN.	SUR	168	4	2	14.1	2.5	14.3
44773	58.9	-19.2	ALL	DIRN.	SUR	752	2	0	19.1	-4.7	19.7
49804	26.3	-50.1	ALL	DIRN.	SUR	9	0	0	71.7	-2.4	71.7
62506	49.3	-14.6	ALL	DIRN.	SUR	139	0	0	12.0	-2.5	12.3
62551	47.9	-14.5	ALL	DIRN.	SUR	243	0	0	22.9	7.1	24.0
62553	54.0	-18.8	ALL	DIRN.	SUR	472	0	0	15.7	1.9	15.8
62558	55.8	-8.1	ALL	DIRN.	SUR	1	1	100	0.0	0.0	0.0
62567	44.2	-12.2	ALL	DIRN.	SUR	345	0	0	11.7	1.6	11.8
62673	61.6	-19.5	ALL	DIRN.	SUR	269	0	0	16.1	-2.1	16.2
62674	59.0	-23.3	ALL	DIRN.	SUR	183	0	0	18.9	-3.8	19.3
62751	48.3	-18.3	ALL	DIRN.	SUR	406	0	0	13.2	-2.7	13.4
62753	44.6	-17.8	ALL	DIRN.	SUR	395	0	0	12.6	5.5	13.8
62754	50.1	-14.8	ALL	DIRN.	SUR	383	0	0	13.3	3.1	13.6
62755	43.8	-10.1	ALL	DIRN.	SUR	293	0	0	14.8	6.4	16.1
62756	44.7	-3.3	ALL	DIRN.	SUR	185	0	0	36.6	25.4	44.6
62758	45.1	-21.0	ALL	DIRN.	SUR	331	0	0	13.0	-6.8	14.7
62759	42.6	-15.6	ALL	DIRN.	SUR	416	0	0	24.3	-3.9	24.6
62760	48.0	-13.7	ALL	DIRN.	SUR	396	0	0	11.0	3.9	11.7
65597	55.2	-22.7	ALL	DIRN.	SUR	1	0	0	0.0	2.5	2.5

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: US ACARs and ADS data are shown at the bottom of the table as US ACAR and ADS respectively.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	3290	2	28	2.1	-0.2	2501	0	15	0	7.6	1.1
ACA	1234	1	13	2.0	-0.5	1113	0	6	0	6.3	0.7
AEA	207	0	24	2.6	1.0	184	1	21	0	10.2	2.3
AEL	415	0	7	1.8	-0.2	416	0	7	0	8.8	1.2
AEY	36	0	8	1.4	0.4	35	0	6	0	9.1	2.1
AFL	272	1	16	1.9	0.1	243	0	9	0	8.4	0.9
AFR	1206	1	14	1.7	0.0	1208	0	14	0	9.4	0.9
AIH	196	1	11	1.9	0.3	186	0	10	0	9.2	1.5
AJM	56	0	2	1.5	-0.8	57	0	4	0	8.7	1.8
AMM	20	0	5	1.8	0.6	20	0	10	0	10.5	-0.9
AMX	175	2	7	2.1	0.1	175	2	5	0	8.4	0.5
ANZ	171	1	2	2.2	-1.1	170	0	4	0	6.8	0.6
AOM	301	0	4	1.6	0.7	304	1	7	0	10.4	0.6
AUA	34	3	32	2.9	-0.8	23	0	9	0	5.7	-1.2
AVA	124	1	1	1.8	-0.2	124	1	2	0	8.1	1.9
AZA	268	3	25	2.1	-0.1	231	0	17	1	9.8	0.4
BAL	416	0	21	1.7	-0.2	417	0	22	1	8.1	0.8
BAW	1454	0	24	2.1	-0.3	1246	0	19	0	7.5	1.2
BBB	50	0	16	1.3	-0.4	44	0	11	0	13.1	1.1
BWA	121	1	13	2.2	0.9	108	1	12	1	11.1	1.4
CDN	412	0	7	1.9	0.6	382	0	5	0	7.1	0.6
CFG	612	0	7	1.9	-0.9	575	0	6	0	9.4	0.7
CKT	99	0	14	1.8	0.5	97	0	11	0	9.8	0.5
CLX	302	0	12	2.1	-0.6	274	0	6	0	6.4	0.5
CMM	85	1	14	2.1	-0.2	78	0	6	0	8.6	1.7
COA	993	0	27	2.0	0.2	756	0	19	0	12.3	2.0
CRL	265	0	6	2.3	0.8	268	1	5	0	8.1	0.8
CTB	161	1	6	1.7	-0.3	159	0	4	1	7.1	0.7
CUB	213	1	9	2.4	1.0	208	1	100	4	11.8	0.3
DAL	2515	0	30	2.0	-0.5	1770	0	19	1	8.3	0.9
DBY	86	2	6	1.6	-0.7	89	1	4	0	8.8	0.2
DHL	185	4	41	4.8	-3.7	150	1	11	1	10.5	0.8
DLH	2301	2	20	2.0	-0.2	1964	0	14	0	8.2	0.9
ELY	131	0	13	1.7	-0.3	128	0	10	0	7.5	1.2
EWW	109	3	19	2.3	0.3	89	2	26	1	15.2	3.9
FDX	140	4	29	2.5	0.7	111	0	15	3	8.2	0.2
FIN	302	0	17	1.8	-0.1	240	0	8	0	6.0	1.1
GAF	71	0	38	2.2	-0.7	47	0	28	0	8.3	1.0
HLF	122	1	21	1.9	-1.1	100	1	12	0	8.0	0.7
IBE	1042	1	31	2.2	0.5	925	1	27	1	9.8	1.3
ICE	778	1	31	2.2	-0.2	583	0	19	1	6.7	0.1
KLM	2411	0	27	1.8	0.0	2239	0	26	1	8.4	0.9
LDA	136	1	33	2.2	-0.8	118	0	28	0	9.8	1.9
LDI	344	1	34	1.8	-0.1	298	1	31	0	9.4	0.0
LEI	139	0	13	2.0	0.1	122	0	9	1	11.6	0.6
LIB	143	1	5	1.7	0.7	143	1	7	1	11.0	2.2
LOT	175	0	32	2.5	-1.5	131	1	21	1	8.5	0.7
LTE	22	0	0	1.8	-0.6	22	0	0	0	5.5	1.3
LTU	520	1	24	1.9	0.0	411	0	14	0	9.4	0.6
MAS	52	0	23	2.1	0.5	47	0	55	2	6.6	1.8
MON	51	2	31	2.4	0.7	41	0	22	2	10.5	2.3
MPD	84	1	12	2.6	1.5	79	0	8	0	8.6	1.3
MPH	501	0	14	2.0	-0.4	458	0	7	0	8.3	1.1
NCA	21	0	0	1.1	-0.3	21	0	0	0	4.2	-0.2
NWA	2731	1	17	2.2	0.8	2324	0	9	0	8.0	0.8
OAL	26	4	23	3.1	2.3	20	0	5	0	9.1	0.6
PAC	76	4	36	2.2	0.6	53	2	23	2	7.7	1.1
RAM	49	4	16	1.6	-0.8	48	0	17	0	10.3	1.6
RCH	234	2	26	2.2	0.0	221	0	19	0	9.1	2.1

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
RJA	53	0	23	2.1	0.5	45	0	16	0	6.4	1.6
RRR	86	1	21	1.6	0.4	84	0	20	0	7.9	-0.5
SAB	60	2	18	2.1	-0.1	51	0	8	0	4.9	0.7
SAS	946	0	1	1.7	-0.2	931	0	2	0	7.2	0.4
SIA	103	0	6	1.9	-1.0	105	0	8	2	8.8	0.9
SLR	64	0	19	2.0	-0.5	64	0	17	2	7.7	-0.2
SPP	159	0	26	2.0	0.1	123	2	44	1	8.8	1.8
SVA	51	0	4	1.5	0.2	54	0	100	2	7.7	1.1
SWR	184	1	23	1.8	-0.1	145	0	10	0	5.9	0.7
TAP	292	0	5	1.6	0.0	289	1	6	0	9.2	1.4
TOW	75	1	32	2.7	0.6	60	2	22	0	10.4	0.3
TSC	36	3	33	1.6	0.1	25	0	20	0	5.4	0.9
TWA	1294	1	33	2.1	0.0	874	0	19	1	8.5	0.6
UAL	1831	1	15	2.2	-0.2	1593	0	8	0	6.4	0.7
UNS	101	0	83	1.4	0.6	101	0	82	0	6.6	1.4
UPS	363	1	41	1.8	0.4	304	0	34	2	8.5	0.9
USA	326	0	30	2.0	-0.1	239	0	100	3	7.6	0.9
VIR	330	0	13	2.1	-0.6	300	0	8	0	8.3	0.8
VKG	53	2	6	1.4	0.1	52	2	4	0	5.4	1.0
WOA	28	0	32	2.0	0.2	25	0	16	0	5.1	0.1
BA	5829	0	2	1.5	0.3	5828	0	7	0	6.4	1.0
KL	2183	0	1	1.7	1.0	2182	0	1	0	6.3	0.8
LH	430	0	1	1.8	1.0	430	0	0	0	6.2	1.2
N	298	1	15	2.6	0.7	275	0	10	0	9.3	1.2
US ACAR	11555	0	1	1.5	0.3	11554	0	1	0	6.7	1.0

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored

- :NUM OBS :Number of observations available at level shown during period.
- :NUM GROSS :Number of gross errors at level shown during period.
- :SD :SD of difference of observations from background values at level shown excluding those with gross errors.
- :BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
ELML7	00	Z	100	16	0	14.3	14.6	-2.9
ELML7	12	Z	100	17	0	18.0	18.3	3.4
FNCM	00	Z	100	13	0	16.8	19.3	9.5
FNCM	12	Z	100	14	0	9.3	13.7	10.1
FNOR	00	Z	100	12	0	12.6	14.8	7.8
FNOR	12	Z	100	11	0	11.5	16.4	11.7
FNOU	00	Z	100	11	0	11.0	12.4	5.6
FNOU	12	Z	100	12	0	13.2	14.5	5.9
FNPH	00	Z	100	13	0	13.2	16.7	10.2
FNPH	12	Z	100	12	0	9.1	9.2	0.8
FNRS	00	Z	100	12	0	13.3	13.7	3.2
FNRS	12	Z	100	7	0	11.5	11.5	1.3
JBOA	00	Z	100	1	0	0.0	24.0	24.0
JCCX	00	Z	100	1	0	0.0	11.0	-11.0
JGQH	00	Z	100	1	0	0.0	21.0	21.0
LDWR	00	Z	100	26	0	9.5	12.0	7.3
LDWR	12	Z	100	27	0	11.0	12.4	5.7
OVYA2	00	Z	100	18	0	16.2	16.2	0.3
OVYA2	12	Z	100	15	0	78.4	79.5	-13.3
OXTS2	00	Z	100	6	0	11.9	13.6	6.5
OXTS2	12	Z	100	6	0	8.7	10.3	5.5
SHIP	00	Z	100	1	0	0.0	103.0	103.0
UCKZ	00	Z	100	1	0	0.0	16.0	16.0
V2VM	00	Z	100	15	0	14.9	17.8	-9.8
V2VM	12	Z	100	15	0	22.0	22.1	-2.0
V2XM	00	Z	100	10	0	25.3	25.4	-2.8
V2XM	12	Z	100	8	0	17.7	19.4	-8.0
XXBA	12	Z	100	5	0	17.3	45.1	41.6
03953	00	Z	100	29	0	17.3	18.9	7.7
03953	12	Z	100	30	0	12.4	13.4	-5.0
04018	00	Z	100	20	0	12.2	12.4	1.9
04018	12	Z	100	23	0	14.6	18.1	10.7
04220	00	Z	100	7	0	11.1	22.6	19.7
04220	12	Z	100	9	0	9.1	20.8	18.7
04270	00	Z	100	27	0	15.6	18.0	-8.9
04270	12	Z	100	28	0	21.2	23.9	-11.0
04339	00	Z	100	20	1	6.1	14.2	12.8
04339	12	Z	100	24	0	8.7	15.3	12.6
04360	00	Z	100	28	0	9.1	16.1	13.3
04360	12	Z	100	29	0	15.1	21.8	15.7
08001	00	Z	100	21	0	42.9	43.5	-7.5
08001	12	Z	100	26	0	16.3	20.2	-11.9
08508	00	Z	100	1	0	0.0	12.0	-12.0
08508	12	Z	100	14	0	20.2	22.5	-9.9
60020	00	Z	100	25	0	4.3	4.3	-0.2
60020	12	Z	100	28	0	0.0	0.0	0.0
71600	00	Z	100	28	0	13.1	28.4	25.1
71600	12	Z	100	30	0	15.5	26.0	20.8
72201	00	Z	100	24	0	21.8	32.0	23.4
72201	12	Z	100	28	0	21.2	28.2	18.6
72402	00	Z	100	27	0	17.4	22.7	14.6
72402	12	Z	100	28	0	15.8	36.4	32.8
74494	00	Z	100	21	0	26.1	31.5	-17.8
74494	12	Z	100	27	0	26.6	47.2	39.0
78016	12	Z	100	27	0	15.1	23.4	17.8

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

```
 WMO  OBS                 NUM    NUM
IDENT TIME ELM   LEV      OBS   GROSS      SD      RMS     BIAS

ELML7  00   Z    500      16      0       12.8    18.1     12.8
ELML7  12   Z    500      19      0       16.3    18.8      9.4
FNCM   00   Z    500      13      0       14.1    15.3      5.9
FNCM   12   Z    500      14      0       11.6    13.8      7.5
FNOR   00   Z    500      13      0        9.6    16.5     13.4

FNOR   12   Z    500      13      0       10.5    20.0     17.0
FNOU   00   Z    500      13      0        6.5    17.0     15.8
FNOU   12   Z    500      12      0        8.1    14.9     12.5
FNPH   00   Z    500      13      0       10.2    16.5     12.9
FNPH   12   Z    500      13      0       11.3    14.1      8.5

FNRS   00   Z    500      12      0        6.4     8.2      5.1
FNRS   12   Z    500      10      0        8.9     9.2      2.2
JBOA   00   Z    500       1      0        0.0     2.0      2.0
JCCX   00   Z    500       1      0        0.0     5.0      5.0
JGQH   00   Z    500       1      0        0.0     9.0      9.0

LDWR   00   Z    500      26      0        9.2    14.4     11.0
LDWR   12   Z    500      28      0        9.6    10.0      2.9
OVYA2  00   Z    500      18      0        8.8    11.9     -8.0
OVYA2  12   Z    500      15      0       12.4    16.0    -10.1
OXTS2  00   Z    500       6      0       11.3    14.9      9.7

OXTS2  12   Z    500       6      0        5.6    11.9     10.5
SHIP   00   Z    500       1      0        0.0   100.0    100.0
UCKZ   00   Z    500       1      0        0.0    12.0    -12.0
V2VM   00   Z    500      16      0       11.2    12.6     -5.9
V2VM   12   Z    500      16      0       35.2    38.6    -15.9

V2XM   00   Z    500      10      0       18.3    18.3     -0.6
V2XM   12   Z    500       8      0        9.1     9.8     -3.8
XXBA   12   Z    500       9      0       25.7    26.1     -4.7
03953  00   Z    500      29      0       11.7    14.7      9.0
03953  12   Z    500      30      0       11.9    12.0      0.8

04018  00   Z    500      28      0       12.2    13.2      5.1
04018  12   Z    500      30      0       12.0    13.7      6.5
04220  00   Z    500      19      0       21.3    21.6      3.6
04220  12   Z    500      19      0       18.0    18.4      3.8
04270  00   Z    500      27      0       12.5    14.1     -6.7

04270  12   Z    500      29      0       14.5    17.2     -9.3
04339  00   Z    500      28      1       12.0    16.1     10.7
04339  12   Z    500      30      0       11.2    15.3     10.4
04360  00   Z    500      28      0       10.7    12.6      6.8
04360  12   Z    500      29      0       12.4    13.0      3.9

08001  00   Z    500      27      0       28.9    29.5      6.0
08001  12   Z    500      29      0       14.0    14.2      2.2
08508  00   Z    500       1      0        0.0     4.0     -4.0
08508  12   Z    500      28      0       11.2    16.3     11.8
60020  00   Z    500      26      0       11.7    19.1     15.1

60020  12   Z    500      28      0       10.4    15.3     11.2
71600  00   Z    500      28      0       12.5    12.8      3.0
71600  12   Z    500      30      0       17.5    18.8      6.8
72201  00   Z    500      24      0        7.3    15.0     13.0
72201  12   Z    500      29      0        7.8    10.3      6.7

72402  00   Z    500      27      0       12.3    12.3      0.3
72402  12   Z    500      30      0       23.6    24.7     -7.4
74494  00   Z    500      26      0       15.2    15.6     -3.2
74494  12   Z    500      28      0       11.1    11.4     -2.3
78016  12   Z    500      27      0       10.0    21.0     18.4
```

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ELML7	00	V	100	14	0	0	3.1	0.2	1.5
ELML7	12	V	100	17	0	0	4.5	1.4	0.4
FNCM	00	V	100	13	0	0	3.2	1.1	2.7
FNCM	12	V	100	11	0	0	3.8	0.7	1.0
FNOR	00	V	100	10	0	0	3.7	-0.9	-1.9
FNOR	12	V	100	10	0	0	4.6	-0.1	1.6
FNOU	00	V	100	8	0	0	2.4	-0.4	0.6
FNOU	12	V	100	8	0	0	2.4	-1.4	-0.4
FNPH	00	V	100	11	0	0	2.4	-0.9	0.9
FNPH	12	V	100	10	0	0	3.5	-0.6	2.6
FNRS	00	V	100	12	0	0	2.5	-0.6	1.9
FNRS	12	V	100	7	0	0	5.8	1.6	0.8
JBOA	00	V	100	1	0	0	5.8	3.3	-0.4
JCCX	00	V	100	1	0	0	5.8	4.4	-1.2
JGQH	00	V	100	1	0	0	5.8	1.8	-0.3
LDWR	00	V	100	26	0	0	5.8	-0.5	-0.4
LDWR	12	V	100	27	0	0	1.9	-0.5	0.0
OVYA2	00	V	100	17	0	0	2.0	-0.5	-0.9
OVYA2	12	V	100	13	0	0	1.8	-0.5	-0.3
OXTS2	00	V	100	4	0	0	1.4	0.0	-0.3
OXTS2	12	V	100	6	0	0	1.4	1.0	0.1
SHIP	00	V	100	1	0	0	1.4	1.2	4.0
V2VM	00	V	100	9	0	0	1.4	2.8	3.2
V2VM	12	V	100	13	0	0	6.7	-1.1	1.4
V2XM	00	V	100	9	0	0	4.3	-1.4	0.5
V2XM	12	V	100	7	0	0	4.3	-1.2	-1.5
03953	00	V	100	29	0	0	1.6	0.0	1.1
03953	12	V	100	30	0	0	2.9	-0.5	0.7
04018	00	V	100	16	1	5	2.2	-3.8	-5.6
04018	12	V	100	21	0	0	3.1	-0.6	0.6
04220	00	V	100	2	0	0	2.0	0.1	0.4
04220	12	V	100	6	0	0	2.0	0.9	0.9
04270	00	V	100	25	0	0	2.0	-0.7	0.1
04270	12	V	100	27	0	0	1.9	-0.6	0.6
04339	00	V	100	18	0	0	2.2	1.3	-1.6
04339	12	V	100	24	0	0	3.3	0.8	-0.2
04360	00	V	100	25	0	0	3.7	0.4	-0.2
04360	12	V	100	24	0	0	1.9	-0.4	0.5
08001	00	V	100	21	0	0	6.6	2.0	2.6
08001	12	V	100	25	0	0	3.8	-0.3	0.0
08508	00	V	100	1	0	0	3.3	2.3	-2.6
08508	12	V	100	13	0	0	3.3	-0.4	-0.2
60020	00	V	100	23	0	0	7.4	-0.7	1.0
60020	12	V	100	28	0	0	3.3	0.1	1.0
71600	00	V	100	28	0	0	2.5	-0.2	1.2
71600	12	V	100	30	0	6	2.6	0.2	-0.1
72201	00	V	100	24	0	0	3.4	-0.3	0.0
72201	12	V	100	28	0	0	4.7	0.5	0.9
72402	00	V	100	27	0	0	3.4	-1.8	0.6
72402	12	V	100	28	0	0	3.7	-0.8	1.1
74494	00	V	100	21	0	0	2.7	-1.0	1.5
74494	12	V	100	27	0	0	1.6	-0.3	0.3
78016	12	V	100	27	0	0	5.2	-0.7	0.9

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: April, 1998

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

```
 WMO   OBS               NUM    NUM     %
IDENT  TIME  ELM   LEV   OBS   GROSS   REJ     RMS    UBIAS   VBIAS

ELML7   00    V    500    15     0       0     9.2     0.3     1.1
ELML7   12    V    500    17     0       0     4.1     0.2    -0.4
FNCM    00    V    500    13     0       7     3.6    -1.3     0.6
FNCM    12    V    500    12     0       0     2.9     0.8    -0.5
FNOR    00    V    500    13     0       0     4.3     0.4    -1.7

FNOR    12    V    500    10     0       0     5.0     0.0    -0.4
FNOU    00    V    500    12     0       0     6.0     0.1     0.6
FNOU    12    V    500    11     0       0     4.1    -0.9     1.8
FNPH    00    V    500    12     0       0     3.3     0.1     1.3
FNPH    12    V    500    12     0       0     5.6     0.9     2.5

FNRS    00    V    500    12     0       0     4.1    -1.7    -0.7
FNRS    12    V    500     7     0       0     3.1     0.0     1.3
JBOA    00    V    500     1     0       0     3.1    -1.5     1.0
JCCX    00    V    500     1     0       0     3.1     0.1     3.3
JGQH    00    V    500     1     0       0     3.1    -1.5    -3.2

LDWR    00    V    500    26     0       0     3.1     0.1    -0.2
LDWR    12    V    500    28     0       0     2.5     0.5     1.4
OVYA2   00    V    500    16     0       0     3.2    -1.1     0.4
OVYA2   12    V    500    14     0       0     3.0     0.0    -0.4
OXTS2   00    V    500     6     0       0     2.7     1.8    -0.3

OXTS2   12    V    500     6     0       0     2.7     1.2    -1.0
SHIP    00    V    500     1     0       0     2.7    -0.1    -0.4
V2VM    00    V    500    11     0       0     2.7    -1.0     0.9
V2VM    12    V    500    16     0       6     3.7    -2.6     1.1
V2XM    00    V    500     9     0       0     2.6    -1.1     0.4

V2XM    12    V    500     8     0       0     2.6    -1.0     0.8
03953   00    V    500    29     0       0     3.1     1.7    -1.1
03953   12    V    500    30     0       0     4.1     0.8     0.4
04018   00    V    500    25     0       0     3.9    -0.1    -0.8
04018   12    V    500    29     0       0     3.6     0.5     0.0

04220   00    V    500    15     0       0     3.3     0.8     0.3
04220   12    V    500    14     0       0     4.8     0.4     0.3
04270   00    V    500    27     0       0     4.9    -1.9    -1.2
04270   12    V    500    27     0       0     3.8     1.4    -0.1
04339   00    V    500    27     0       3     4.7    -1.0     0.1

04339   12    V    500    29     0       0     5.6    -0.4    -2.3
04360   00    V    500    27     0       0     5.3    -1.8     0.6
04360   12    V    500    25     0       0     4.0     0.4     0.9
08001   00    V    500    27     0       0     3.0     1.0    -0.2
08001   12    V    500    28     0       3     5.5     2.2     2.1

08508   00    V    500     1     0       0     3.3     6.7    -1.2
08508   12    V    500    23     0       0     3.3    -0.1    -0.3
60020   00    V    500    25     0       0     4.4     0.3    -0.1
60020   12    V    500    28     0       0     3.7     1.2     0.0
71600   00    V    500    28     0       0     2.3     2.0     0.4

71600   12    V    500    30     0       0     5.1     0.5    -0.5
72201   00    V    500    23     0       0     4.1     0.1    -1.0
72201   12    V    500    29     0       0     2.4    -0.8     0.7
72402   00    V    500    27     0       0     2.6     0.6     1.0
72402   12    V    500    30     0       0     2.2     1.0     1.0

74494   00    V    500    26     0       0     3.8    -0.2     0.0
74494   12    V    500    28     0       0     3.6     0.4     0.5
78016   12    V    500    27     0       0     5.4    -0.6     1.1
```

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45